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INTERNATIONAL BULLETIN OF BACTERIOLOGICAL NOMENCLATURE AND TAXONOMY

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OFFICIAL ORGAN OF THE JUDICIAL COMMISSION AND OF THE INTERNATIONAL COMMITTEE ON BACTERIOLOGICAL NOMENCLATURE

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BACTERIOLOGICAL NOMENCLATURE
AND
TAXONOMY

Volume 3 March 15, 1953 Number 1

NEWS AND NOTICES

DATES OF ISSUE OF BULLETIN IN 1953. The Board of Editors of the BULLETIN will be concerned during the next several months with the preparation of pertinent material for consideration by the Judicial Commission and by the International Committee on Bacteriological Nomenclature before the meetings to be held in Rome immediately preceding and during the 6th International Congress for Microbiology in September 1953. The proposals for amendments to the International Bacteriological Code of Nomenclature should be published and discussed, preliminary statements relative to Opinions should be presented, all Opinions of the Judicial Commission should be summarized and all special requests formulated. These agenda should be available not only to members of the Judicial Commission and of the Committee but to all microbiologists, particularly those concerned with bringing some order out of nomenclatural confusion.

To facilitate the realization of these objectives the Editorial Board has decided to change the publication dates for the four issues of the BULLETIN for 1953. The issues will appear as follows.

Number 1. March 15, 1953. To be somewhat decreased in size. To contain preliminary notices relative to the Rome Congress.

Numbers 2 and 3. June 1, 1953. These two issues to be combined and expanded to constitute a Synopsis which will include:

a. Pertinent information relative to times and places of meetings of the Judicial Commission, of the International Committee, and of all Subcommittees

and Committees concerned with Taxonomy.

b. All material, including Preliminary Statements, relating to Opinions requested from the Judicial Commission, with Summary of status of Opinions issued and pending.
c. All proposals for amendments to the International Bacteriological Code of Nomenclature.
d. Proposals relative to cooperation through the International Association of Microbiologists with the International Union of Biological Sciences and the United Nations Educational, Scientific and Cultural Organization (UNESCO).
e. The Agenda of the Judicial Commission.
f. The Agenda of the International Committee on Bacteriological Nomenclature.
g. The Agenda of the several Committees and Subcommittees.

Number 4. November 15, 1953. Summary of Committee and Congress actions relative to nomenclature and taxonomy.

BOTANICAL COMMITTEE ON BACTERIA

The Stockholm Botanical Congress authorized the establishment of an International Society for Plant Taxonomy to work in close association with the International Union of Biological Sciences. This society absorbed the Bureau of Nomenclature of the Congress. The General Committee of Botanical Nomenclature has as its secretary Prof. J. Lanjouw of Utrecht, who is also Chief Editor of Taxon, and as rapporteur of the Advisory Board of Nomenclature is ex officio a member of all committees. This General Committee of Botanical Nomenclature includes in its membership the secretaries of all committees.

At the Stockholm meeting Prof. O. N. Allen, Madison, Wisconsin, U. S. A. was chosen as secretary of the Committee for Bacteria. He is therefore also a member of the General Committee for Botanical Nomenclature.

BACTERIOLOGICAL NOMENCLATURE AND TAXONOMY

Professor Allen has announced the names of the members of the Committee for Bacteria as follows:

Secretary; Prof. O. N. Allen, Department of Agricultural Chemistry, University of Wisconsin, Madison 6, Wisconsin, U. S. A.

Prof. R. S. Breed, 6 Sunset Drive, Geneva, New York, U. S. A.

Prof. R. E. Buchanan, Room 24 Curtiss Hall, Iowa State College, Ames, Iowa, U. S. A.

Dr. S. T. Cowan, National Collection of Type Cultures, Central Public Health Laboratories, Colindale Avenue, London N. W. 9, England.

Prof. John Ramsbottom, British Museum (Natural History), London, England.

Prof. Th. Thjøtta, Villaveien 30, V. Aker. pr., Oslo, Norway.

Prof. T. Wikén, Inst. f. Bakteriologie u. Gärungsbiologie, Eidg. Techn. Hochschule, Universitätstrasse 2, Zürich Switzerland.

Member Ex Officio. Prof. J. Lanjouw, Botanisch Museum and Herbarium, Lange Nieuwstraat 106, Utrecht, Netherlands.

SUBSECTION ON BACTERIAL TAXONOMY. Although not appearing in the Preliminary Programme, the Organizing Committee of the Congress has decided to establish a subsection on bacterial taxonomy under the chairmanship of Dr. S. T. Cowan. Those who wish to read papers to the subsection should send titles and abstracts (two copies) either to Dr. Cowan or to the Secretary-General of the Congress, Istituto di Igiene, "G. Sanarelli", Città Universitaria, Rome, before 30th April.

VI INTERNATIONAL CONGRESS FOR MICROBIOLOGY ROME, SEPTEMBER 6-12, 1953

The Preliminary Programme of the VI International Congress for Microbiology has been issued by the Organizing Committee constituted as follows:-

PRESIDENT: V. Puntoni.
VICE-PRESIDENTS: L. Califano, G. Penso
P. Redaelli.
SECRETARY GENERAL: E. Biocca.
TREASURER: M. Pantaleoni.
MEMBERS: I. Altara, C. Arnaudi, G. A. Canaperia, G. Caronia, V. Cilli, A. Cimmino, D. Marotta, A. Morelli, B. Polettini, C. Sibilia, A. Zironi.

REGISTRATION

Registration forms may be secured from the Secretary of the Congress, Instituto di Igiene, Città Universitaria, Roma, Italy. Compagnie Wagon-Lits/Cook has been appointed Official Agent for the Congress. Payments of subscription fees may be made through the nearest office or through the office of the secretary.

"The subscription fee is 12,000 Italian lire for each active member and 8,000 Italian lire for each accompanying member of his family (affiliate member). Members of Scientific Societies will be charged a reduced subscription fee of 10,000 Italian lire."

HEADQUARTERS

The headquarters of the Congress will be open beginning September 1st at the Città Universitaria, Rome, and will include a Registration Office, a Travel Bureau and a Bank Agency.

COMMUNICATIONS

Titles and abstracts of papers (communications) to be presented must be submitted in two typewritten copies to the

Secretary of the Congress not later than April 30th, 1953, Abstracts should not exceed 500 words.

ORGANIZATION AND PROGRAMME OF THE CONGRESS

The Sixth International Congress for Microbiology will include:

A. Plenary Sessions. Plenary sessions are planned for the opening and closing sessions and other events of general interest.

B. Sections. A list of the sections will be given in the final programme according to the subjects of the communications received.

The following is a provisional list:

I. General microbiology. (In this final programme this section will be divided into sub-sections (morphology, metabolism, growth factors, etc.), according to the communications received.)

II. Growth inhibitors (antibiotics, chemotherapeutics, antiseptics).

III. Genetics

IV. Pathogenicity (virulence, toxins).

V. Microbiological technique and diagnosis. (In the final programme this section will be divided into sub-sections (probably including large scale production of microorganisms, quantitative microbiology, etc.) according to the communications received).

VI. General immunology.

VII. Immunological chemistry.

VIII. Animal viruses.

XI. Plant viruses.

X. Bacteriophages.

XI. Rickettsiae.

XII. Schizomycetes. (To be divided into sub-sections in the final programme, according to the communications received.)

XIII. Spirochaetes.

XIV. Fungi.

XV. Protozoa.

XVI. Microbe-transmitting arthropods.

XVII. Microbiology applied to human, veterinary and plant pathology.

XVIII. Microbiology applied to agriculture.

XIX. Industrial microbiology and fermentations.

XX. Microbiology applied to hygiene.

XXI. Microbiology of milk and foodstuffs.

C. Symposia. All the lectures at the symposia will be by invitation. They will be organized by the Istituto Superiore di Sanità. The following symposia are planned:

1. Bacterial cytology.

2. Microbial metabolism.

3. Nutrition and growth factors.

4. Growth inhibitors and chemotherapy.

5. Morphology, biology and systematics of the Actinomycetales.

6. Host-virus interactions.

D. Meetings of the Special Committees of the International Association of Microbiologists will be called by the Secretary General of the I. A. M. at the proposal of the respective Presidents. Decisions will be submitted for approval at the General Assembly at the closing session of the Congress.

MEETINGS OF JUDICIAL COMMISSION AT THE VI INTERNATIONAL CONGRESS OF MICROBIOLOGISTS

Most of the agenda to be considered by the International Committee on Bacteriological Nomenclature must be put in form by the Judicial Commission. It is therefore necessary that the Judicial Commission hold a series of meetings before the first meeting of the International Committee, and at least three before the formal opening of the Congress.

Dr. Cowan, one of the Joint Secretaries, has submitted the following proposals for the meetings of the Judicial Commission.

Thursday,	September 3	- 9:00 a. m.
Friday,	September 4	- 9:00 a. m.
Saturday,	September 5	- 9:00 a. m.
Tuesday,	September 8	- 3:30 p. m.
Wednesday,	September 9	- 2:30 p. m.

MEETINGS OF THE INTERNATIONAL COMMITTEE ON BACTERIOLOGICAL NOMENCLATURE AT THE VI INTERNATIONAL CONGRESS OF MICROBIOLOGISTS

The International Committee will have a large number of items included in the agenda which require consideration and action. Two meetings of the Committee have been proposed by the Joint Secretaries, as follows:

Monday, September 7 - 2:30 p.m.(14:30)
Friday, September 11- 2:30 p.m.(14:30)

It is possible that the business of the Committee cannot be completed in the two meetings, and called or special meetings will be required.

SYNOPSES OF COMMITTEE AND COMMISSION AGENDA

The VI International Microbiological Congress will include an unusually full programme of meetings of committees, commissions and subcommittees that have been set up to consider the problems of microbiological nomenclature and taxonomy. There will be held sessions of the Judicial Commission and perhaps of some of the subcommittees in the first week in September immediately preceding the opening of the Congress, followed by meetings of the Judicial Commission, of the International Committee on Bacteriological Nomenclature, and of at least ten taxonomic subcommittees, some with several subdivisions. The number of problems to be considered is large. Planning of the work of each group is needed if substantial progress is to be made.

In preparation for the work of similar committees and sections in other congresses of biologists, particularly in preparation for the consideration of problems of nomenclature in botany, there have been prepared Synopses which include all proposals with pertinent facts useful in making decisions. In order to facilitate the work of the several committees and commissions noted above, the Editorial Board of the International Bulletin of Bacteriological Nomen-

clature and Taxonomy believes it wise to prepare in the time available as complete a Synopsis as is practicable of matters to be considered, and to publish such Synopsis in time to be useful to committeemen and commissioners.

It has therefore been decided to consolidate into a single issue the second and third numbers of Volume 3 of the BULLETIN, published normally in April and July, to use this number primarily for a Synopsis and to issue this by June 1, 1953. This Synopsis will be mailed to all subscribers including all members of commissions, committees and subcommittees.

All of the proposals to come before the Judicial Commission will be included insofar as these can be known in advance. These will include resumés of all Opinions issued, requests for new opinions and reconsideration of old Opinions, proposed emendations of the International Bacteriological Code of Nomenclature, and additions to lists of nomina conservanda and nomina rejicienda. There will be included "Preliminary Statements" outlining background information which may be useful to Commissioners in arriving at decisions.

Likewise the agenda of the International Committee will be outlined. This listing cannot be complete in detail, as the Committee must consider and act upon matters reported to it by the Judicial Commission and by its numerous taxonomic subcommittees. It must recommend all actions desired from the Plenary Session of the Congress.

The Synopsis will include also the agenda of the several taxonomic subcommittees insofar as this is desired and will prove useful. An attempt may be made to define and clarify the objectives in some cases. It is hoped that the Chairmen and Secretaries of the several subcommittees will cooperate actively with the two Permanent Joint Secretaries, Dr. Cowan and Prof. Wikén in the preparation of announcements to subcommittee members and the formulation of the agenda for publication. Utilization of the pages of the Bulletin should save much correspondence. The

publication of the Synopsis issue of the Bulletin by June 1 should enable all members of committees to have the material for examination at least two months before the opening of the Congress and in time for reasonable advance consideration of the various proposals.

The Editorial Board invites all committee chairmen and secretaries to make full use of the pages of the Bulletin in getting information to all committee members.

PROVISIONAL PROGRAMME OF MEETINGS OF THE TAXONOMIC SUBCOMMITTEES

Permanent Secretary S. T. COWAN has outlined a provisional programme of meetings for the several Taxonomic Subcommittees of the International Committee. It will be noted that one meeting only of each subcommittee is provided. One session may be sufficient for some subcommittees, others will require two or perhaps more. The chairmen of the several subcommittees will be able to arrange for other sessions if needed.

Some of the subcommittees may wish to meet in the week immediately preceding the formal opening of the Congress, as is being done by the Judicial Commission.

The Chairmen of the several Subcommittees should note that all recommendations which require approval of the Plenary Session to become Official Acts of the Congress should be in the hands of one of the Permanent Secretaries, Dr. Cowan or Dr. Wikén, for presentation to the International Committee on Bacteriological Nomenclature at its meeting at 2:30 P.M. (14:30) on Friday, September 11th.

The times of the meetings provisionally arranged for by the several subcommittees are as follows:

Virus Subcommittee. Chairman Dr. C. H. Andrewes.
Time of Meeting, Tuesday Sept. 8, 2:00 p.m. (14:00)

BACTERIOLOGICAL NOMENCLATURE AND TAXONOMY

Clostridium Subcommittee. Chairman Dr. A. R. Prévot.
Time of Meeting, Tuesday Sept. 8, 2:00 p.m. (14:00)

Provisional Staphylococcus Phage-typing Subcommittee.
Convener Dr. R. E. O. Williams.
Time of Meeting, Tuesday Sept. 8, 2:00 p.m. (14:00)

Enterobacteriaceae Subcommittee. Co-chairmen
Dr. F. Kauffmann and Dr. P. R. Edwards.
Time of Meeting, Tuesday Sept. 8, 2:00 p.m. (14:00)

Leptospira Subcommittee. Chairman Dr. J. W. Wolff.
Time of Meeting, Tuesday Sept. 8, 2:00p. m. (14:00)

Streptococcus Subcommittee. Acting Chairman
Dr. V. D. Allison.
Time of Meeting, Wednesday, Sept. 9, 2:00 p.m. (14:00)

Provisional Streptococcus Serotyping Subcommittee.
Convener Dr. R. E. O. Williams.
Time of meeting, Wednesday, Sept. 9, 2:30 p.m. (14:30)

Medical Mycopathology Subcommittee. Chairman
Dr. W. J. Nickerson.
Time of Meeting, Wednesday, Sept. 9, 2:00 p.m. (14:00)

Mycobacterium Subcommittee. Chairman Dr. P. Hauduroy
Time of Meeting, Wednesday, Sept. 9, 2:00 p.m. (14:00)

Neisseria Subcommittee. Chairman Dr. E. G. D. Murray
Time of Meeting, Wednesday, Sept. 9, 2:00 p.m. (14:00)

SUMMARY PROGRAMME

Thursday, September 3rd

09:00	- Judicial Commission

Friday, September 4th

09:00	- Judicial Commission

Saturday, September 5th

09:00	- Judicial Commission

Sunday, September 6th

10:00	- Opening Session Afternoon free

Monday, September 7th

08:30-12:30	- Scientific Sessions
14:30	- Nomenclature Committee
15:30-18:30	- Scientific Sessions

Tuesday, September 8th

08:30-12:30	- Scientific Sessions
14:00	- Clostridium Subcommittee
14:00	- Enterobacteriaceae Subcommittee
14:00	- Leptospira Subcommittee
14:00	- Staphylococcus phage typing Subcommittee
14:00	- Virus Subcommittee
15:30-18:00	- Scientific Sessions
15:30	- Judicial Commission
18:30	- Reception at the Campidoglio

BACTERIOLOGICAL NOMENCLATURE AND TAXONOMY

Wednesday, September 9th

08:30-12:30	- Scientific Sessions
14:00	- Streptococcus Subcommittee.
14:00	- Medical mycopathology Subcommittee
14:00	- Mycobacterium Subcommittee.
14:00	- Neisseria Subcommittee
14:30	- Judicial Commission
14:30	- Streptococcus serotyping Subcommittee.
15:30-18:30	- Scientific Sessions
21:00	- Theatre performance or concert.

Thursday, September 10th

Excursion

Friday, September 11th

08:30-12:30	- Scientific Sessions
14:30	- Nomenclature Committee
15:30-18:00	- Scientific Sessions
18:30	- Visit to the Instituto Superiore de Sanita and reception.

Saturday, September 12th

08:30-12:30	- Scientific Sessions
16:00	- Closing Session
21:00	- Official Banquet

NOMENCLATURAL AND TAXONOMIC REVIEWS

VIERHOVEN, W. Aerobic sporeforming nitrate-reducing bacteria. Thesis. pp. 160. Pl. I. Uitgeverij Waltman-Delft, Netherlands. As a result of his studies of nitrate-reducing properties of various spore producing bacteria, the author concludes that the spore producing aerobic bacteria of the genus Bacillus should be placed in two principal groups, those which are strictly dependent upon atmospheric oxygen and are aerobic, and those which when supplied with suitable hydrogen acceptors, other than oxygen, will grow under anaerobic conditions. The first group of species he would retain in the genus Bacillus. He advocates the use of the generic name Aerobacillus Donker for those species which use carbohydrates anaerobically in a 2,3-butanediol fermentation and the generic name Zymobacillus Kluyver and van Niel for those species which utilize carbohydrates anaerobically with an ethyl-alcohol-acetone fermentation. For those species which can utilize nitrate under anaerobic conditions as a hydrogen acceptor with production of free nitrogen gas he proposes the new generic name Denitrobacillus with the type species Denitrobacillus licheniformis (Weigmann) Vierhoven. This species is closely related to the Ford strain of Bacillus subtilis. The species name Bacillus nitroxus Beijerinck and Minkman is regarded as a synonym of D. licheniformis.

GENERIC NAMES OF FUNGI PROPOSED FOR CONSERVATION. Dr. Donald P. Rogers, secretary of the Special Committee for Fungi designated by the Stockholm Botanical Congress has issued under date of December 23, 1952 a report of the action of this Committee relative to nomina generica conservanda, and the related nomina generica rejicienda.

The Committee approved five resolutions which are of general microbiological interest and of special concern to the Committee on Medical Mycology of the International Association of Microbiologists.

I. Every proposal for conservation not "accompanied by a detailed statement of the case for and against..... conservation" (Art. 21, Note 1, of the 3rd edition of the Rules; Art. 24, Note 1, of the new code) nor having such a statement supplied by a later student, is to be rejected, to be reinstated as a subject for consideration by the Committee only after such a statement is supplied.

II. Every proposal for conservation of a name that would be retained without conservation against the nomina rejicienda proposita is to be rejected. (A list of 51 names denied conservation on the basis of this resolution is appended.)

III. Every proposal for conservation of a name that is a later homonym of a name in current use for a genus in another group is to be rejected; and consultation is to be immediately undertaken with the appropriate Special Subcommittee concerning all other names that are later homonyms of names in other groups.

IV. The following names proposed for conservation and about which there seems to be little difference of opinion are to be conserved, such action to be automatically rescinded if their present status is altered by the action of the Stockholm Congress on the Rules. (This list of 14 conserved generic names is appended in the Report, and is also published in International Code of Botanical Nomenclature, pp. 76-78. 1952. None of the names are among those included in the list published in the "Report of Committee on Medical and Veterinary Mycopathology, "Int. Bul. of Bact. Nomen. and Tax. 2:143-150. 1952. The lists appear in two columns, one headed "Nomina conservanda" and the other "Nomina rejicienda").

V. As soon as the Rules as amended by the Stockholm Congress are available, all proposals for conservation not adopted or rejected under the foregoing paragraphs (I-IV) are to be referred to the members of the Committee for a vote, and six months after the date of mailing of blank ballots the votes returned are to be recorded and the decisions of the Committee published.

By written ballot the Committee adopted the following resolution.

V. The assent of three-fifths of the members shall be necessary for the adoption of any proposal for conservation.

The Committee also adopted proposals for the conservation of 17 generic names of fungi and for the related rejection of conflicting names. Included in the list of conserved generic names is Candida Berkh. with rejection of Syringospora, Parendomyces and Pseudomonilia. This is of interest to the Committee on Medical and Veterinary Mycology as several of their recommendations concern species of the genus Candida.

Proposals for the conservation of 61 generic names were rejected.

The Report contains the following statement relative to procedures for conservation as these have been developed:

"The proposals approved by the written vote of the Committee are not thereby finally adopted. They are now submitted to the Advisory Board of the General Committee of Botanical Nomenclature whose action will be reported in Taxon; if favorable action is received, they are tentatively adopted, and the conserved names may be retained pending the decision of the next International Botanical Congress. As a matter of practice, there seems no reason to anticipate the subsequent rejection of any of these proposals; all of those known to conflict with names used in groups other than the Fungi have already been submitted to the secretaries of the appropriate special committees."

BACTERIOLOGICAL NOMENCLATURE AND TAXONOMY

THE NOMENCLATURE OF THE BACTERIUM FOUND IN GRANULOMA VENEREUM

Otto G. Bier
Dept. of Immunology, Instituto Biológico, São Paulo, Brazil

Aragão and Vianna (1) in 1913 in a study of 8 cases of granuloma venereum confirmed the existence of the so-called "Donovan bodies" (2) and interpreted them as bacteria related to Friedländer's bacillus. They proposed the name Calymmatobacterium granulomatis for the organism. In three of the eight cases an encapsulated rod was isolated from cultures of the lesions and its etiological relationship to granuloma venereum discussed by the authors. The authors expressed doubt as to the specificity of the bacteria cultured because they grew readily on ordinary media and were cultivated in only three cases, even though all lesions showed large numbers of Donovan bodies on microscopic examination.

In 1917 (3), Aragão refers to 5 more cultures obtained by Dr. H. de Souza Araujo and emphasizes once again that the etiological significance of the cultivated bacterium could only be established by further research. In a paper presented to the 1st Brazilian Congress of Dermatology and Syphilology in October 1918 and published in March 1919 (4), Dr. Aragão states that he has isolated Friedländer-like organisms from 3 out of 20 normal urines, as well as from material from cases of rhinitis. He discusses the negative value of the isolation of such organisms, even from closed lesions (as in the case of Dr. Araujo's cultures) since there is always the possibility of an interchange of organisms between closed and open lesions. He compared the situation with what has been observed in leprosy, from which material only saprophytic mycobacteria are commonly isolated that ought not to be confused with the true Hansen's bacillus. The latter has not yet been cultivated.

The conclusions reached by Aragão in his paper published in 1919 are the following:

1. The true microbe of granuloma venereum is the one described in 1905 by Donovan to which the name Calymmatobacterium granulomatis Aragão and Vianna 1912 had been given, on account of its morphology, staining properties, mode of reproduction and parasitism.
2. Calymmatobacterium granulomatis had not yet been cultivated.
3. The microbes isolated from cases of granuloma venereum are not identical with the ones seen inside the cells in granuloma lesions, although similar to them in their morphology and staining properties.
4. The cultures obtained from cases of granuloma venereum are from capsulated bacteria of the Friedländer group which are commonly found in the human body and do not produce lesions like those produced by Calymmatobacterium granulomatis.
5. It seems highly probable that the bacteria cultivated from cases of rhinoscleroma are also not identical with the characteristic microbes seen in the tissues in cases of that disease. The capsulated bacteria easily isolated from ozena cases also do not seem to be the agents of this disease.

It was clear to Dr. Aragão in 1918 that the name Calymmatobacterium granulomatis should be applied only to the Donovan bodies and not to the accessory Klebsiella-like organisms which had been isolated from granuloma lesions.

In spite of the clearness of these statements, Bergey in the first idition of Bergey's Manual (5) describes the encapsulated bacterium found by Aragão and Vianna in lesions of granuloma venereum under the name Encapsulatus inguinalis. Unfortunately Calymmatobacterium granulomatis A. and V. was given as a synonym. This cnnfusion was further increased in the second edition where the name of the Friedländer-like organism isolated was changed to Klebsiella granulomatis with Calymmatobacterium granulomatis A. and V. still listed as a synonym.

Aragão, in 1933 (6,7), criticizes this ascription and wisely suggests the recognition of 2 genera in the tribe Klebsielleae, the genus Klebsiella to include Friedländer's bacillus, and the genus Calymmatobacterium. The latter is to be reserved for intracellular parasites united in zooglea-like masses, not cultivable, producing cutaneous and mucous ulceration such as in granuloma venereum. These statements were not, however, taken into consideration by Chapman who prepared the section covering the granuloma venereum organism in the last (6th) edition of Bergey's Manual (8). In this he suppressed all descriptions of species of Klebsiella except that of Friedländer's bacillus, merely listing other described species in an Appendix to the genus under the caption "The evidence for differentiating them into distinct species is so meager that for the present it may be better to consider them as varieties of Klebsiella pneumoniae." In this appendix Klebsiella granulomatis Bergey et al. is still listed as a synonym of Calymmatobacterium granulomatis A. and V. and the organism is listed as in previous editions as isolated "from granuloma inguinale". The new name given to Donovan bodies by Anderson, De Monbreun and Goodpasture (9) - Donovania granulomatis - is used and the organism is placed in the genus Donovania in an appendix to the tribe Pasteurelleae.

Thus Calymmatobacterium granulomatis A. and V. is made to appear as if this species was based on the cultures that they isolated and cultured from lesions of granuloma vereneum, although as indicated above Aragão and Vianna differentiated between the organisms found intracellularly (Donovan bodies) and the cultured organisms that resembled Friedländer's bacillus. There is no doubt in my mind that the species name Calymmatobacterium granulomatis A. and V. has priority.

The inclusion of this species in an appendix to the tribe Pasteurelleae also appears unjustified, so much more so since the work of Rake et al. (10,11) shows by means of the electron microscope, not only the morphological similarity between Donovan bodies and Friedländer's ba-

cillus but also the antigenic relationship between them.

Summary and Conclusions

Evidence is presented showing that Calymmatobacterium granulomatis Aragão and Vianna, 1913 is the correct name for the agent of granuloma venereum. The genus Calymmatobacterium Aragão and Vianna should be listed as a genus coordinate with Klebsiella Trevisan in the Tribe Klebsielleae of the family Enterobacteriaceae.

Acknowledgment. The kind interest shown by Dr. R. S. Breed in the preparation of this paper is gratefully acknowledged.

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BACTERIOLOGICAL NOMENCLATURE AND TAXONOMY

A NOTE ON THE NAME STREPTOCOCCUS AGALACTIAE LEHMANN AND NEUMANN

P. Arne Hansen

Live Stock Sanitary Service and the Department of Bacteriology, University of Maryland, College Park, Maryland, U. S. A.

The correctness of the name Streptococcus agalactiae Lehmann and Neumann 1896 has recently been questioned by Professor Haupt (1) who wishes to replace it with Streptococcus agalactiae (Kitt 1893) Haupt 1952. The status of the species and its proper name was considered by Hansen (2) 1935, who pointed out that the oldest valid name was Streptococcus nocardi Trevisan 1889 (3). However, this name has never gained any usage in the literature, while Streptococcus agalactiae Lehmann and Neumann (4) has come into wide use since it was proposed in 1896. In spite of the, in part, faulty description of the organism, Hansen (2) recommended the continued use of Streptococcus agalactiae Lehmann and Neumann, this being after Streptococcus nocardi, the next name which is indisputably a binomial. He emended the previous description of the organism with observations based on his original research, agreeing in all essentials with the work of Nocard and Mollereau (5), (6), (7), (8), Orla-Jensen (9), Ayers and Mudge (10), and Klimmer and Haupt (11).

It is admitted that Kitt (12) 1893 furnished, for his time, an excellent diagnosis of the species, in fact his description is much better than the one by Lehmann and Neumann (4); however, he used Streptococcus agalactiae contagiosae. Hence it is not correct to place Kitt's name after the combination Streptococcus agalactiae. A trinomial is invalid as a name for a species no matter what kind of description is attached. Reference is made to Chapter 3, Rule 6: "Names of species are binary combinations consisting of the name of the genus followed by a single specific epithet. If an epithet consists of two

or more words, these must either be united or joined by hyphen.... "and to Rule 24: "A name must be rejected if it is illegitimate, i.e., if it is contrary to a rule. The publication of an epithet in an illegitimate combination must not be taken into consideration for purposes of priority.... "and furthermore to Rule 15: "For the indication of the name (unitary, binary, or ternary) of a group to be accurate and complete, and in order that the date may be readily verified, it is necessary to cite the author who first published the name in question." Hence, Kitt's name can be cited only in the event that agalactiae contagiosae is considered as a single epithet in which case it must be hyphenated or united giving the species name agalactiae-contagiosae. This would create a most undesirable precedent. A flood of cumbersome names will enter bacteriological literature if trinomials easily can be changed to binomials by mere hyphenation. Bacteriologists more than any other group of biologists have used descriptive Latin phrases in naming species.

Were one to agree with Professor Haupt that the name given by Lehmann and Neumann is a cause of confusion, because of the faulty description that accompanied it, the only alternative that is in strict accord with the rules of nomenclature would be to discard agalactiae altogether and go back to the older name Streptococcus nocardi Trevisan. Trevisan refers to the correct description by Nocard and Mollereau, and De Toni and Trevisan (13) the same year use this name accompanied by a description based on Nocard and Mollereau's work. In the opinion of this author, it would seem more practical to retain the name Streptococcus agalactiae Lehmann and Neumann, and to emend their description according to the best knowledge of the present day; rather than to resurrect the correct but long forgotten name nocardi, which has never come into general use.

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INTERNATIONAL BULLETIN
OF
BACTERIOLOGICAL NOMENCLATURE
AND
TAXONOMY

Volume 3 June 1, 1953 Numbers 2 and 3

NEWS AND NOTICES

SYNOPSIS. This double issue of the BULLETIN replaces the April and July issues. It includes the provisional agenda of the International Committee on Bacteriological Nomenclature, of the Judicial Commission, and of the several Taxonomic Subcommittees, all proposals for the emendation of the Bacteriological Code of Nomenclature, all OPINIONS subject to review, all requests for OPINIONS, various Committee Reports, and supporting documents.

Copies of this synopsis have been mailed to all members of International Committee on Bacteriological Nomenclature, to members of the Judicial Commission, and to members of the Taxonomic Subcommittees.

All members of these Committees are urged to consider carefully all proposals and their supporting documents in preparation for the meetings to be held in Rome under the auspices of the 6th International Congress for Microbiology, September 6-12, 1953.

Committee and Commission Members who will be unable to attend the meetings in Rome are urged to assist in the appointment of their alternates who may act for them, and to send the names of such alternates to one of the Permanent Secretaries, Dr. Cowan or Prof. Wikén.

INTERNATIONAL COMMITTEE ON BACTERIOLOGICAL NOMENCLATURE

Meetings of September 7th and 11th, 1953

Provisional Agenda

1. Call to order by the Chairman (Prof. A. J. Kluyver).

2. Membership of the Committee.

   (a) Losses due to resignation or death.
   (b) Nominations received for new members.

3. Matters referred by the Judicial Commission.

   (a) Amendments to the Bacteriological Code.
   (b) Official Opinions issued since August, 1950.

4. Nomination of members to fill vacancies on the Judicial Commission.

5. Reports of taxonomic subcommittees.

6. Election of new members for the Judicial Commission.

7. Election of Chairman and Vice-Chairman of the Nomenclature Committee.

8. Any other business.

9. Adjournment.

N. B. Items 5, 6 and 7 will not be taken until September 11; items 2 and 3 may be dealt with at both meetings.

JUDICIAL COMMISSION OF THE INTERNATIONAL COMMITTEE ON BACTERIOLOGICAL NOMENCLATURE

Meetings of the Judicial Commission are tentatively scheduled for the following dates. September 3--9:00. September 4--9:00. September 5--9:00. September 8--15:30. September 9- 14:30.

AGENDA (Provisional). JUDICIAL COMMISSION

1. Call to order by the Chairman (Prof. R. E. Buchanan).

2. Constitution of the Commission.

   (a) Roll call of members.
   (b) Determination and acceptance of alternates.
   (c) Loss of Commissioners due to resignation or death.
   (d) Recommendations to the International Committee.

   Note:- The members and officers of the Judicial Commission at the beginning of the Sixth International Congress of Microbiology at Rome, 1953, are the following.

   Class of 1953. (Term expiring at the close of the sixth Congress.)
   Prof. R. E. Buchanan, Ames, Iowa, U. S. A. (Chairman).
   Prof. A. J. Kluyver, Delft, The Netherlands.
   Prof. E. G. D. Murray, Montreal, Canada.
   Dr. C. Stapp, Braunschweig-Gliesmarode, Germany

   Class of 1956. (Term expiring at the close of the Seventh Congress.)
   Prof. A. Lwoff, Paris, France.
   Prof. J. C. Penido, Rio de Janeiro, Brazil.
   Prof. E. Renaux, Brussels, Belgium.
   Prof. A. Sordelli, Buenos Aires, Argentina.

Class of 1959. (Term expiring at the close of the Eighth Congress.)

Dr. C. H. Andrewes, London, England.
Dr. J. Ramsbottom, London, England.
Prof. Th. Thjøtta, Oslo, Norway.
Prof. C. B. VanNiel, Pacific Grove, California, USA.

The two Permanent Joint Secretaries of the International Committee of Bacteriological Nomenclature are ex officio voting members of the Judicial Commission, and are also Permanent Secretaries of the Judicial Commission.

Dr. S. T. Cowan, London, England (Permanent Secretary).
Prof. Torsten Wikén, Zürich, Switzerland. (Permanent Secretary).

3. Approval of voting procedures.

4. Agenda modifications and additions. Final approval.

5. Consideration of Proposals for amendment to the International Code of Bacteriological Nomenclature. (See this BULLETIN pp. 31-62). It is hoped that each member of the Commission will consider carefully the proposals as printed herewith, and be able to pass upon them expeditiously. It is suggested that each Commissioner bring with him his copy of the Code. Some reprint copies will be available at the Rome Meeting).

6. Consideration of OPINIONS issued or under consideration by the Commission.

   (a) OPINIONS which have been published and to which no objections have been recorded and which become official if no appeal is made to the International Committee.
   (b) OPINIONS which have been published and which have been appealed to the International Committee.
   (c) OPINIONS on which votes have been taken, but which have not been published.
   (d) OPINIONS on which votes may be taken on the basis of Preliminary Statements and studies by the Commissioners.

7. Report of the Editorial Board.

8. Approval of Recommendations to the International Committee.

9. Unfinished business.

10. New business.

11. Election of officers.

12. Adjournment.

PROVISIONAL AGENDA OF TAXONOMIC SUBCOMMITTEES OF THE INTERNATIONAL COMMITTEE ON BACTERIOLOGICAL NOMENCLATURE.

The Provisional Agenda of several of the taxonomic subcommittees of the International Committee have been submitted.

Clostridium Subcommittee

1. Membership of the Subcommittee
2. Clostridium botulinum classification
3. Any other business

Neisseriaceae Subcommittee

1. Membership of the Subcommittee
2. Report to be presented to the International Committee
3. Any other business.

Streptococcus Subcommittee

1. Election of new chairman
2. Election of secretary
3. Membership of subcommittee
4. Organization of work of subcommittee
5. Pneumococcus classification
6. Any other business

Provisional Staphylococcus Phage-typing Subcommittee

1. Election of chairman
2. Election of secretary
3. Membership of the Subcommittee
4. Organization of work of Subcommittee
5. Problems of technique in phage typing
6. Problems of terminology of phage types
7. Phage typing reference laboratories
8. Any other business

Provisional Streptococcus Serotyping Subcommittee

1. Election of chairman
2. Election of secretary
3. Membership of the subcommittee
4. Organization of work of subcommittee
5. Problems of serotypign terminology
6. Streptococcal serotyping reference laboratories
7. Any other business

THE INTERNATIONAL BACTERIOLOGICAL CODE OF NOMENCLATURE: PROPOSALS RELATIVE TO EMENDATION AND PUBLICATION.

Editorial Board.

The International Bacteriological Code of Nomenclature was approved at the Copenhagen 4th Congress for Microbiology in 1947. Certain amendments were added at the 5th Congress held at Rio de Janeiro in 1950, still others were approved in principle with exact wording to be formulated by the Judicial Commission or by the International Committee on Bacteriological Nomenclature. The Judicial Committee was further instructed to study the revised International Code of Bacteriological Nomenclature as approved at the Stockholm (1950) Botanical Congress with two purposes in mind:

a. To make recommendations where desirable that would bring the bacteriological and botanical phraseology of present rules into agreement.

b. To consider the several emendations of the botanical code to determine their usefulness and applicability in bacteriological nomenclature, and to submit suitable recommendations at the time of the Rome meeting of the 6th Congress.

It has been thought advisable first, to submit several recommendations which, if approved, would constitute directives to the Judicial Commission as to their future action and, second, to refer adequately to the several draft unapproved proposals that have been made relative to code amendment.

GENERAL RECOMMENDATIONS

Publication of Revised Code. The desirability of prompt publication of a revised International Bacteriological Code of Nomenclature should be considered. It is suggested that such published code be annotated, and resemblances to or differences from the codes in use in botany and in zoology be noted. The problem of including texts in languages other

than English (particularly French, German and Spanish) should be considered.

Draft Proposal 1. The Editorial Board and Judicial Commission are requested to edit and publish an "official" revised "International Bacteriological Code of Nomenclature." It is desirable that in addition to the English text there be included texts in one or more other languages, including to the extent practicable French, German and Spanish. It is proposed that, insofar as practicable, the revised code be annotated, and that there be included examples drawn from bacteriology of the effect of rules. As appendices are to be included lists of nomina conservanda and nomina rejicienda, and such other statements as are recommended by the Judicial Commission and approved by the International Committee.

EMENDATIONS AND RECOMMENDATIONS FOR EMENDATION. INTERNATIONAL BACTERIOLOGICAL CODE OF NOMENCLATURE

Including comparisons with the Revised International Code of Botanical Nomenclature.

The Chapter and Section headings of the Bacteriological Code are given below. Under each Principle, Rule, Recommendation or Provision there is noted the number of the Article of the Botanical Code which corresponds to it in whole or in part. The approved emendations and suggested emendations are included in their appropriate places, together with some explanatory text.

CHAPTER 1.
General Considerations.

The corresponding chapter heading in the Botanical Code is "General Considerations, Guiding Principles and Definitions." Inasmuch as it is proposed to add a paragraph to this section to include certain definitions, the chapter heading may well be amended.

Draft Proposal 2. It is proposed to amend the heading of Chapter 1 to read: "General Considerations and Definitions."

General Consideration 1. (Bot. Code. Art. 1.) No proposals. It should be noted that the Bacteriological Code assumes jurisdiction over names of "bacteria, related organisms, and the viruses." Provision is also made for consideration of names of other microorganisms and development of recommendations for consideration and action by the appropriate Committees and Commissions in Botany and Zoology.

General Consideration 2. (Bot. Code. Art. 2.) No proposals. The Art. 2 has been somewhat modified by revising paragraph 3, second sentence to read "They are always retroactive except when expressly limited....."

General Consideration 3. (No corresponding statement in the Botanical Code.) No proposal.

CHAPTER 2.
General Principles.

Principle 1. (Bot. Code Art. 4) No proposal.

Principle 2. (Bot. Code Art. 5) No proposal.
(Principle 2 differs from Article 5 by the inclusion of the sentences: "In doubtful cases a resumé in which all pertinent facts are outlined should be submitted to the Judicial Commission for an Opinion.")

Principle 3. (Bot. Code Art. 6) No proposal.
(A typographical error in this Bulletin 2:114-15;1952 incorrectly assigned an amendment concerning the use of "taxon" to Principle 3 rather than to the correct position with Principle 5 q. v.)

Principle 4. (Bot. Code Art. 7) Proposal for amendment.
Draft Proposal 3. Insert word "taxonomic" before and the word ("taxa") following the word "groups" in the first sentence of Principle 4. The revision will read: "Scien-

tific names of all taxonomic groups (taxa) are usually taken from Latin or Greek."
(The word "group" has another meaning in bacteriology when used singly, as noted in Recommendation 8a q. v.)

Principle 5. (Bot. Code Art. 8) Proposal for amendment.

Draft Proposal 4. Revise Principle 5 to read (inserted words and phrases underlined):-
Nomenclature deals with:-
(1) The terms which denote the categories of taxonomic groups or units, and the relative ranks of these categories (such as species, genus, family, order).
(2) The names which are applied to the individual taxonomic groups (such as Bacillus subtilis, Streptococcus, Spirillaceae, Spirochaetales).
(Explanatory note. These are similar to changes made in the corresponding Article 8 of the Botanical Code.)

Approved Amendment. The following Note is to be added to Principle 5. It was approved in principle at the 1950 International Congress for Microbiology, the exact wording to be fixed by the Judicial Commission. The formulation approved reads:-
Note 1. The use of the word taxon (plural taxa) is appropriate for the term taxonomic group or the word group wherever used in the sense of taxonomic group in the International Bacteriological Code of Nomenclature. The word group has as its preferred use in bacteriology that indicated in Recommendation 8a.
(Query. Should the foregoing note be shortened by substituting "this Code" for "the International Bacteriological Code of Nomenclature"?)

Several words and phrases used frequently in the Bacteriological Code may be defined profitably. Similar definitions have been included as a new Article 10 in the Botanical Code.

Draft Proposal 5. Add as Note 2 to Principle 5 the following:-
Note 2. As used in this Code, the word name means a

name which has been validly published, whether legitimate or illegitimate.
A legitimate name or epithet is one that is in accordance with the rules.
An illegitimate name or epithet is one that is contrary to the rules.
The correct name of a taxon with a particular circumscription, position, and rank is the name which must be adopted for it under the rules.
A name is effectively published when its publication is in accordance with Rule 11.
A name is validly published when its publication is in accordance with Rules 12, 13, and 14.

Principle 6. (Bot. Code Art. 11) No proposal.

Principle 7. (Bot. Code Art. 12, 13, 14. Recommendation 14a and Art. 15) Amendment proposed.

The statements of Articles 12, 13, 14 and 15 of the Botanical Code have been reworded, but for the most part this rewording would seem to fit the situation in bacteriology no better than Principle 7. One statement, however, might well be adopted and is proposed as an emendation to be included as the first sentence of revised Principle 7.

Draft Proposal 6. Insert as the first sentence of Principle 7 the following:

Every individual is treated as belonging to a number of categories of consecutive rank and consecutively subordinate of which species is the basic one.

Principle 8. (Bot. Code Art. 9) No proposal.

Principle 9. (Bot. Code Art. 16) Amendment proposed.

The Bacteriological Code in several places uses the phrase "valid name" instead of "correct name" as noted in Draft Proposal 6 above. A later Draft Proposal recommends that the rule of priority be not applied above

the rank of order.

Draft Proposal 7. Revise Principle 9 to read as follows:

Each order or taxon of lower rank with a given circumscription, position and rank can bear only one correct name, the earliest that is in accordance with this Code of Nomenclature. Provision may be made for exceptions that have been approved for inclusion in the list of nomina conservanda.

Note. In subgenera, genera, and groups of higher rank, the correct name is the earliest name published, provided that this is in conformity with the rules of this Code. In species the correct name is the binary and in subspecies the ternary combination of the generic name with the earliest available legitimate epithet or epithets validly published with the same rank.

Principle 10. (Bot. Code Art. 17) No proposal. Possibly the words "in this Code" might be appended.

Principle 11. (Bot. Code Art. 18 in part) . Amendment proposed. (See this Bulletin 1:126-131. 1951). It is proposed that the last sentence of the first paragraph be revised and transferred to Rule 17 q. v., and that the second paragraph be revised and transferred to Rule 9 q. v.

Draft Proposal 8. The application of the names of taxonomic groups (taxa) is determined by means of nomenclatural types. A nomenclatural type is that constituent element of a taxonomic group (taxon) to which the name of the group is permanently attached.

Note. The nomenclatural type is not necessarily the most typical or representative element of a group. It is merely that element with which the name of a group is permanently associated.

Principle 12. (Bot. Code Art. 22) No proposal.

CHAPTER 3

Rules of Nomenclature with Recommendations.

Section 1. Naming of Groups of Various Ranks.

At the 5th International Congress for Microbiology it was agreed that Rules 1 to 5 inclusive should be replaced by rules conforming to the following directives (See This Bulletin 1:58-61. 1951):-

1. The name of a family of bacteria should be derived from the name of a contained genus.
2. It should be recommended that the generic name chosen should be that of the type genus of the family.
3. The method of formation of the names of other taxa higher than the genus should be definitely fixed.

Rule 1. (Bot. Code Art. 27-32 in part). Amendment proposed.

Draft Proposal 9. Rescind Rule 1 and replace with a new rule.
Rule 1. The names of all taxonomic groups (taxa) above the rank of genus are substantives or adjectives used as substantives, of Greek or Latin origin, or latinized words, in the plural number.

Rule 2. (Bot. Code Art. 26, 27 in part) Amendment proposed.

A draft proposal was published (This Bulletin 1:59. 1951). This is given below as Draft Proposal 10a. In view of the directive to seek, insofar as practicable, uniformity with the Botanical Code, an alternative Draft Proposal 10b is given which more nearly agrees with the corresponding botanical articles.

Draft Proposal 10a. Rescind Rule 2 and replace with the following:-
Rule 2. Names of all taxonomic groups (taxa) above the rank of family are taken preferably from a combination of characters covering the nature of the taxa as closely as possible, or from a single character of outstanding

importance. Names of orders and suborders may appropriately be based upon the name of a contained family.

Draft Proposal 10b. Rescind Rule 2 and replace with the following:-
Rule 2. Names of all taxa above the rank of order are taken preferably from a combination of characters covering the nature of the taxa as closely as possible, or from a single character of outstanding importance.

Rule 3. Amendment proposed.

A draft proposal was published (This Bulletin 1:59. 1951). This is given below as Draft Proposal 11a. An alternative Draft Proposal 11b is also given as conforming more closely to the Botanical Code.

Draft Proposal 11a. Rescind Rule 3 and replace with the following new Rule 3, and Recommendation 3a.
Rule 3. Names of taxonomic groups (taxa) between suborder and genus are formed by the addition of the appropriate suffix to the stem of the name of a contained genus.

Recommendation 3a. The name of each taxonomic group (taxa) between suborder and genus is derived preferably from the name of the type genus.

Draft Proposal 11b. Rescind Rule 3 and replace with the following:-
Rule 3. Names of taxonomic groups (taxa) between subclass and genus are formed by the addition of the appropriate suffix to the stem of the name of the type genus.

Included in the Draft Proposals (This Bulletin 1:59. 1951) was a Note providing for the recognition of certain commonly used names of families as permanent exceptions to Rule 3. The names of seven families were proposed as exceptions and a "Preliminary Statement" published (This Bulletin 1:167-176. 1951). The names were submitted to the members of the Judicial Commission, but

no name was approved. (See This Bulletin 2:123-126. 1952). Provision is elsewhere made in the Code for approval of exceptions by inclusions in the list of nomina conservanda. Whether the proposed Note, under the circumstances, is needed should be determined by the International Committee.

Draft Proposal 12. Add the following note to Rule 3.
Note. To avoid disadvantageous changes in certain old or widely used family names which do not conform to Rule 3, exceptions may be made when approved by the International Committee on Bacteriological Nomenclature. The following exceptions have been approved:----

Rule 4. (Bot. Code Art. 27, 28, 29, in part) Amendment proposed.

A draft proposal was published (This Bulletin 1:60. 1951). This is given below as Draft Proposal 13.

Draft Proposal 13. Rescind Rule 4 and replace with the following:-
Rule 4. Names of taxonomic groups between subclass and genus have suffixes to fix the taxonomic rank. The suffix for orders is -ales, for suborders -ineae, for families -aceae, for subfamilies -oideae, for tribes -eae and for subtribes -inae.

Comment: These endings conform to those of the Botanical Code. Possibly attention of the botanists should be called to the fact that the tribal ending -eae engenders awkward word formation. For example tribal names derived from certain generic names recognized in bacteriology would be Nitrosogloeeae, Nocardieae, Beggiatoeae, Savoieae, Tarpeieae. In botany Linnaeeae. Whether these multi-vowel endings are good Latin may be questioned. A revision of the tribal ending -eae might well be proposed to the botanists.

Rule 5. (Bot. Code Art. 30 and 31). Amendment proposed and adopted.

An amendment to Rule 5 was approved by the International Committee on Bacteriological Nomenclature in 1950 at its meeting in Rio de Janeiro. The last sentence of the first paragraph now reads (added statement underlined):-

Rule 5. (Revised in part) Generic names and subgeneric names are subject to the same rules and recommendations and, from a nomenclatural standpoint they are coordinate except that citations of authors and dates are governed by Rule 16.

The Botanical Code has materially modified its treatment of the names of taxa between genus and species. The first sentence of Article 31 reads:-

"The name of a subdivision of a genus is a combination of a generic name and a subdivisional epithet connected by a term (subgenus, section, series etc.) denoting the rank of the subdivision."

This whole concept is quite foreign to custom in bacteriology and zoology. Rule 5 in the Bacteriological Code envisages quite a different treatment of names of subgenera.

Rule 6. (Bot. Code Art. 33). No proposal.

Rule 7. (Bot. Code Art. 34, 35, 36 in part). No proposal.

Rule 8. (Bot. Code Art. 34, 35, 36, 37 in part). No proposal.

Section 2.
Designation of Nomenclatural Types.

Rule 9. (Bot. Code Art. 18, 19, 20 and 21). Amendment proposed.

The International Committee on Bacteriological Nomenclature at its meeting in Rio de Janeiro in August 1950 approved certain proposals made by the Judicial Commission to amend the Bacteriological Code by outlining the fixing of nomenclatural types of the several taxonomic groups. An amendment relating to the fixing of type species for genera was approved in principle. Emphasis

was laid upon the desirability of developing proposals that would be in conformity with the rules of botanical and zoological nomenclature insofar as the nature of bacteriological nomenclature would allow. The following draft proposals are submitted to replace present Rule 9 and its several recommendations.

Draft Proposal 14. Rescind Rule 9 and Recommendations 9a, 9b, 9c, 9d and replace with the following:-

Rule 9. For each taxonomic group there shall be designated a nomenclatural type. The type of a class or a subclass is an order, that of an order or suborder is a family, that of a family, subfamily, tribe or subtribe is a genus, that of a genus or a subgenus is a species, that of a species or subspecies is an authentic culture, specimen, preparation, illustration, or description.

(1) Nomenclatural types of taxa of higher rank than genus.

The nomenclatural type of a family, subfamily, tribe or subtribe, whose name has been formed in conformity with the Rules and Recommendations, is that genus from whose name the name of the higher taxon has been derived. The nomenclatural type genus of a family whose name is recognized as an exception (See Note Rule 3) may be fixed by the Judicial Commission, preferably at the time that approval to the exception is made. The nomenclatural types of taxa of rank higher than family may be fixed at the time of their proposal by the author. If not so fixed, they may be designated by the Judicial Commission.

(2) The nomenclatural types of genera and subgenera.

a. The nomenclatural type of a genus or subgenus is the species or one of the species included when the name of the genus or subgenus was originally validly published.

b. If the author in the original publication of a generic or subgeneric name definitely selected a type species, this species shall be accepted as the type regardless of other considerations

(type selection by original designation). The meaning of the expression "selected a type species" is to be rigidly construed. Mention of a species as an illustration or example of a genus does not constitute selection of a type.

c. If the author of a generic or subgeneric name in his original publication failed to designate a type species, the type may be selected by a subsequent author, and the author who first makes the choice must be followed unless it can be proved that his choice is not in accordance with the rules.

1. If the genus when originally published included but one species, this species shall be the type (selection by monotypy).
2. If the genus when originally published included more than one species, the type species selected shall be one of these. However, species inquirendae, species doubtfully referred to the genus, species mentioned as in any way exceptional, species which definitely disagree with the generic description (provided others agree), and species which possess characters stated in the generic description as rare or unusual are to be excluded from consideration in selecting the type.
3. If none of the species named by an author in his original description and publication of a generic name can be recognized, that is, if no identifiable type species can be selected in accordance with the rules, the Judicial Commission may issue an Opinion declaring such generic name to be a nomen rejiciendum and without standing in nomenclature. However, if such generic name has come into use for identifiable species named subsequently, one of these later species may be selected by international agreement as the type with the generic name ascribed to the author of the binomial designated as the type. Such selection of a type and recognition of the author of generic name must be based upon an Opinion

by the Judicial Commission, and if such Opinion is questioned, its validity shall be determined by action of the International Committee on Bacteriological Nomenclature.

4. The publication of a new generic name as an avowed substitute for an earlier one does not change the type of the genus.

(3) The nomenclatural types of species and infraspecific taxa.

Recommendation 9. Nomenclatural types of bacterial species obviously cannot be the dried or preserved specimens used for higher plants or animals. A type may be either a living culture maintained in a bacteriological laboratory, more particularly in one of the national type culture collections, or it may be a description.

Definition. A type culture is a living culture of an organism which is a descendent of the original culture or isolation from which the author who first described the organism made his original description, which culture has been maintained pure, and which agrees in its characters with the original description. Authors of names of species or of infraspecific taxa are urged to deposit authentic cultures with one or more of the national type culture collections and thus make them available to other workers for comparison.

A neotype culture (or substitute type culture or standard culture) is one which has been accepted by international agreement to replace a type culture which is no longer in existence. It should agree with the diagnosis given by the original describer, and should be recommended by a Committee of workers familiar with the species and approved by the Judicial Commission.

For species which cannot be maintained in laboratory cultures or for which neither type cultures or

substitute type cultures exist, the type is the original description, preparation or illustration.

Draft Proposal 15. Delete Recommendation 9a and substitute the following:-
Recommendation 9a. When publishing the name of a new taxonomic group (taxon), authors should indicate carefully the nomenclatural type of the taxon being named. This type determines the application of the name in the event of this taxonomic group being subsequently divided.

Draft Proposal 16. Delete Recommendation 9b, 9c, 9d and substitute the following:-
Recommendation 9b. The utmost importance should be given to the preservation of the original "type" material on which the descriptions of new species and subspecies are based. If the microörganism is one which may be maintained in pure culture, an authentic culture designated as the type culture should be deposited with one or more of the national or international type culture collections. When no such authentic culture is available a substitute type culture may be designated by the Judicial Commission upon the recommendation of a committee of experts. Bearing in mind the morphological, biochemical, antigenic and virulence changes that may occur as the result of repeated subculture, every precaution should be taken to maintain such cultures with a minimum amount of change. It is likewise important that descriptions, illustrations and differentiations of new species and subspecies be as complete as possible.

Section 3.
Publication of Names.

Rule 10. (Bot. Code Art. 23) Amendment proposed.

The present statement of Rule 10 in the Bacteriological Code is: "Legitimate bacteriological nomenclature begins with Linnaeus' Species Plantarum, edition 1, 1753." The corresponding Article 23 in the Botanical Code stresses valid publication rather than legitimate nomenclature. It is suggested that the Rule 10 be rephrased as follows:-

Draft Proposal 17. Revise Rule 10 to read as follows:-
Rule 10. Valid publication is treated as beginning for the bacteria with May 1, 1753, the date of publication of Linnaeus' Species Plantarum, edition 1.

It should be noted that this date was fixed by action of the first International Congress of Microbiology in its plenary session, Paris 1930 (Proceedings, Part 2, p. 527).

Rule 11. (Bot. Code Art. 39, 40 and 41) No proposal.

Comment: The corresponding articles in the new Botanical Code have been considerably revised. The definitions in the phraseology of the third paragraph of Rule 11 and the corresponding paragraph of Article 40 may be noted.

Bacteriological Code. The date of acceptance of an article for publication as given in a publication does not indicate the effective date of publication and has no significance in the determination of priority of publication of names.

Botanical Code, Art. 40. The date of effective publication is the time that the printed matter becomes available as defined in Article 39. In the absence of proof establishing some other date, the one appearing in the printed matter must be accepted as correct.

Rule 12. (Bot. Code Art. 42, Recommendation 42a, 43, 44, 45, 46, 47) Amendment proposed.

Draft Proposal 18. Revise Rule 12 first paragraph by inserting (taxon) after "taxonomic group", and replace the word "group" by "taxon". The revised paragraph will read:-
Rule 12. (Par. 1) A name of taxonomic group (taxon) is not validly published unless it is both (1) effectively published (see Rule 11), or (2) accompanied by a description of the taxon or by a reference to a previously and effectively published description of it.

Draft Proposal 19. Revise the third paragraph of Rule 12 to read as follows:-
Rule 12. (Par. 3). Valid publication is not effected by placing a name on a culture or preparation of bacteria in a collection or exhibit open to the public.

Draft Proposal 20. It is proposed to reword Paragraph 4 of Rule 12 and to add a note as follows:-
Rule 12. (Par. 4). A name (1) which is not accepted by the author who published it, or (2) which is merely proposed in anticipation of the future acceptance of the group concerned, or of a particular circumscription, position or rank of the taxon, or (3) a name merely mentioned incidentally is not validly published.

Note:- Number (1) above does not apply to names or epithets published with a question mark or other indication of taxonomic doubt, yet published and accepted by the author. By "incidental mention" of a new name or combination is meant mention by an author who does not intend to introduce the new name or combination concerned.

Draft Proposal 21. Paragraph 6 of Rule 12 may be considerably shortened and clarified by substituting the wording of Article 47 of the revised Botanical Code.
Rule 12. (Par. 6). The name of a taxon is not validly published by the mere mention of the subordinated taxa included in it.

Draft Proposal 22. A recommendation 12c was approved in principle by the International Committee at the 5th International Congress. The proposal reads as follows:- "Authors describing a new species, genus or family should indicate the next higher rank into which the taxon is inserted." It is suggested that the following reworded statement be considered.
Rule 12. Recommendation 12d. An author who describes and names a new taxon should indicate the name and rank of the next higher taxon. (The name of the family to which a new genus is allocated, the name of the order in which a new family is placed).

The following recommendations which have been adapted from the revised Botanical Code may be considered.

Draft Proposal 23. Recommendation 12e.
An author of a new name should clearly indicate the rank of the taxon concerned.

Draft Proposal 24. Recommendation 12f.
An author when publishing the name of a new taxon should designate the type, and in the case of a species or subspecies, the place where the type is preserved.

Draft Proposal 25. Recommendation 12g.
An author when publishing new generic or subgeneric names should give their etymology and also that of new epithets when their meaning is not obvious.

Rule 13. (Bot. Code Art. 48, 50) Amendment proposed.

Comment. Rule 5 of the Bacteriological Code states that generic and subgeneric names are subject to the same rules and recommendations, and are therefore coordinate from the standpoint of nomenclature. It is proposed that Rule 13 be amended the better to recognize the directive in Rule 5 and also to include a note better defining what is meant by the term "provision of a combined generic and specific description". It is also suggested that consideration be given to the inclusion of the substance of Recommendation 50a of the Botanical Code.

Draft Proposal 26. It is proposed that Rule 13 be rephrased as follows and that a note be included.
Rule 13. The name of a genus or subgenus is not validly published unless it is accompanied (1) by a description of the genus or subgenus, (2) by citation of a previously and effectively published description of the genus or subgenus or (3) by a reference to a previously and effectively published description of the genus as a subdivision of a genus or by the description of the subgenus as a genus.
The name of a monotypic new genus based on a new species is validly published if there is provided a combined generic and specific description.

Note: A description of a new species assigned to a monotypic new genus is treated also as a generic description if the genus is not described.
Similarly a description of a monotypic new genus based on a new species is treated also as a specific description if the generic name and specific epithet are published together and the species is not separately described.

Draft Proposal 27. It is suggested that a new Recommendation 13a be considered.
Recommendation 13a. An author who gives a combined generic and specific description should mention the points in which the new genus differs from its allies.

Rule 14. (Bot. Code Art. 52, 53, 54) Amendment proposed.

A slight rewording of Rule 14 is suggested for clarification.

Draft Proposal 28.
Rule 14. The name of a species or subspecies (variety) is not validly published unless it is accompanied (1) by a description of the species or subspecies, or (2) by the citation of a previously and effectively published description of it.

Section 4.
Citation of Authors' Names

Rule 15. (Bot. Code Art. 55, 56, 57, 58) Amendment proposed.

Draft Proposal 29. The second sentence of Par. 2 of Rule 15 may well be made a recommendation; it is scarcely formulated as a rule. The following rewording is suggested:
Rule 15. Recommendation 15a. When the alteration of diagnostic characters or circumscription has been considerable, the nature of the change and the author responsible may be indicated by adding suitably abbreviated words such as emend. (emendavit), mutatis charact., excl. gen., excl. spec., etc.

Draft Proposal 30. It is proposed that the word "validly" be inserted before "published" in the first line of Par. 2 of Rule 15.
Rule 15. (Par. 2. Line 1) When a name of a taxonomic group has been proposed but not validly published by one author... etc.

Draft Proposal 31. It is suggested that the following statement from Article 57 of the Botanical Code be considered as Par. 3 of Rule 15.
Rule 15. (Par. 3). Retention of a name in a sense which excludes the type can be effected only by conservation.
Note: See Provisions 4 and 5 for method of conserving names.
Rule 15. Recommendation 15b. When a name is conserved so as to exclude its type, it should not be ascribed to the original author with such expressions as emend., mutatis charact., etc; but the name of the author whose concept is conserved must be cited as authority.

Draft Proposal 32. It is suggested that Par. 4 of Rule 15 be reduced to a recommendation and rephrased as follows:-
Rule 15. Recommendation 15c. When a name with a description or reference to a description by one author is published in a work of another author, the word in should be used to connect the names of the two authors.

Rule 16. (Bot. Code Art. 59, 60). Amendment proposed.

Comment. Two or more authors frequently join in the publication of names of new taxa. It is usually awkward and unnecessary to cite the names of all the co-authors. It has become increasingly common to cite the name of the first author followed by et al. For example, Hauduroy, Ehringer, Guillot, Magrou, Prévot, Ronet and Urbain in the Dictionnaire des Bactéries Pathogenes have proposed a large number of new combinations (comb. nov.). To list seven names after each new combination is obviously undesirable. The formula Pasteurella ellingeri Hauduroy et al. has been used. Should this approach be formalized into a Recommendation?

It is suggested that the following proposals adapted from the revised Botanical Code be considered.

Draft Proposal 33. Recommendation 16c. In the citation of a nomen nudum, its status should be indicated by adding nomen nudum (nom. nud.) to the citation.

Draft Proposal 34. Recommendation 16d. If a generic name antedated by one of its synomyms or by a homonym is valid on account of being a nomen conservandum, the words nom. conserv. should be added to the citation.

Draft Proposal 35. Recommendation 16e. Names cited in synonymy should be spelled exactly as published by their authors. If any explanatory words are required, these should be inserted in brackets. If a name is adopted as valid with alterations from the form as originally published, it is desirable that in full citations the exact original form should be appended.

Section 5.
Changes in Names Resulting from Segregation or Union of taxa.

Rule 17. (Bot. Code Art. 61, 62). Amendment proposed.
Comment. There are three, not two, alterations which may warrant a change in the name of a taxon.

Draft Proposal 36. Modify the first paragraph of Rule 17 to read as follows:
Rule 17. (Par. 1). An alteration of the diagnostic characters or of the circumscription of a taxonomic group (taxon) does not warrant a change in its name, except as this may be necessitated (a) by transference of the taxon, (b) by its union with another taxon of the same rank, or (c) by a change of its rank.

Comment. It is suggested that the last sentence of the first paragraph of Principle 11 belongs rather with Rule 17 as a directive as to the action to be taken when the nomenclatural type of a taxon is excluded.

Draft Proposal 37. Add the following sentence to the first paragraph of Rule 17.
Rule 17. (Par. 1, last sentence). The name of a taxonomic group must be changed if the nomenclatural type of the taxon is excluded.

Rule 18. (Bot. Code Art. 63). Amendment proposed.
Comment. The phraseology of the rule perhaps should be modified to eliminate the reference to a "specimen" as the type of a species or subspecies.

Draft Proposal 38. Rephrase the first paragraph of Rule 18 as follows:-
Rule 18. (Par. 1.) When a species is divided into two or more species, the specific epithet must be retained for one of them, or (if it has not been retained) must be reinstated. When a type has been designated for the species, the specific epithet must be retained for the species including that type. When no type was designated, one should be chosen.

Rule 19. (Bot. Code Art. 67-68.) No proposal.

Rule 20. No proposal.

Rule 21. No proposal.

Rule 22. (Bot. Code Recommendation 71a). No proposal.

Section 6.
Rejection and Replacement of Names and Epithets.

Rule 23. (Bot. Code Art. 72). Amendment proposed.
Comment. The corresponding Article of the Botanical Code has been rephrased in part. It may be considered as a replacement of Art. 23.

Draft Proposal 39. Rephrase Rule 23 to read as follows:
Rule 23. A legitimate name or epithet must not be rejected merely because it is inappropriate, or disagreeable, or because another is preferable or better known, or because it has lost its original meaning.

Rule 24. (Bot. Code Art. 73, 74, 75, 76, 77, 78). Amendment proposed.

Comment. Two alternative wordings are presented for revision of the first sentence of Rule 24.

Draft Proposal 40. Revise the first sentence of Section (4) of Rule 24.

First alternative. Rule 24 (4) (First sentence). If it is a later homonym of the name of a taxonomic group (taxon) of bacteria, plants or protozoa; that is, if it duplicates a name previously and validly published for a taxon of the same rank based on a different type.

Second alternative. Rule 24 (4) (First Sentence). If it is a later homonym of the name of a taxonomic group (taxon) in bacteriology, botany, or protozoology, that is if it duplicates a name previously and validly published for a taxon of the same rank based on a different type.

Draft Proposal 41. Revise Section (5) of Rule 24 to read as follows:-

Rule 24. (5). If it is used with different meanings and so becomes a long persistent source of error.

Rule 25. (Bot. Code Art. 79). Amendment proposed.

Draft Proposal 42. Rephrase Rule 25 as follows:-

Rule 25. A specific or infraspecific epithet is illegitimate in the following special cases and must be rejected:

(1) When it is merely a word not intended as a name.
(2) When it is merely an ordinal adjective used for enumeration.
(3) When it exactly repeats the generic name (tautonym).
(4) When it is a later homonym within the same genus, that is, when it duplicates a specific epithet previously and validly published for a species of the same genus based upon a different type.
(5) When it was published in a work in which the Linnaean system of binary nomenclature for species was not consistently employed.

Rule 26. (Bot. Code Art. 81). Amendment proposed.

Draft Proposal 43. Add to Rule 26 the following:-
Rule 26. Addition at end of last sentence:- The epithet in the resultant combination is treated as new.

Section 7.
Orthography and Gender of Names and Epithets.

Rule 27. (Bot. Code Art. 82). Amendment proposed.
Comment: The revised Botanical Code includes some changes that may well be considered or modified for inclusion in the Bacteriological Code. The following revisions of Rule 27, its notes and the accompanying Recommendations are suggested.

Draft Proposal 44. Rephrase Rule 27 and Notes 1-6 to read as follows:-
Rule 27. The original spelling of a name or epithet must be retained, except typographic or orthographic errors. When two or more generic names or two or more specific epithets in the same genus are so similar as to cause confusion, they are treated as orthographic variants of the same name or epithet.
Note 1. The phrase "original spelling" as used in this Rule means the spelling employed when the name of the taxon was validly published. It does not refer to the use of an initial capital or small letter. Adjectives used as specific or subspecific epithets change gender endings when necessary to agree with the gender of the generic name.
Note 2. The use of a wrong connecting vowel or vowels (or the omission of a connecting vowel) in a generic name or in a specific or subspecific epithet gives rise to orthographic variant (See Rec. 27-h).
Note 3. When there is doubt as to whether two names or epithets are sufficiently alike to be confused, they should be referred to the Judicial Commission for an Opinion.
Note 4. An unintentional orthographic error later corrected by the author is to be recognized as legitimate in its corrected form.
Note 5. The name of a taxon derived from the Greek but

not transliterated by its author in accordance with approved standards may be corrected. The name of the taxon as originally published becomes an orthographic variant of the corrected name, but without prejudice to the validity of publication by the first author. Specific and other epithets and names of Greek origin differing merely by having Greek and Latin terminations respectively are orthographic variants. Epithets having the name meaning and differing only slightly in form are considered as orthographic variants. The genetive and adjectival forms of a personal name are, however, treated as different epithets.

Note 6. The liberty of correcting a name or epithet must be used with reserve, especially if the change affects the first syllable, and above all the first letter, of the name or epithet.

Comment. Certain recommendations accompanying Rule 27 require some examination, particularly in view of the changes made in corresponding recommendations in the revised Botanical Code.

Draft Proposal 45. Replace Recommendation 27a by the following statement:-

Recommendation 27-a. When a new name or epithet for use in bacteriological nomenclature is derived from a Greek word, the transcription to Latin form should conform to classic usage. Appendix A (q. v.) to this Code may be used as a guide.

Draft Proposal 46. Add the following sentence to Recommendation 27-c(2).

Recommendation 27-c (2) (last line). In latinized names ending in -us, this termination is dropped before adding the suffix.

Draft Proposal 47. It is proposed to clarify Recommendation 27-d, Par. 2 which reads "When the epithet is a substantive, it is formed in the following manner:-" by changing to the following.

Recommendation 27-d. (Par. 2 First sentence). "When the epithet is a substantive, the modern latinized genitive is

formed in the following manner:-"

Comment. The International Committee directed the Editorial Board to consider and submit a proposal which would form genitive specific epithets from names of men by adding i (in accordance with zoological custom) rather than by adding ii (in accordance with custom in botany and present custom in bacteriology.) Alternative proposals have been prepared, the first continuing the present practice of adding ii, the second adopting the new practice of adding i.

Draft Proposal 48. Substitute either Draft A or Draft B for (1) and (2) in Recommendation 27-d.

Draft A. (a) When the name of the person ends in a vowel, the letter i is added (thus, sonnei from Sonne) except where the name ends in a, when e is added (thus, balansae from Balansa).

(b) When the name ends in a consonant, the letters ii are added, except when the name ends in er, when i is added. Specific epithets which do not conform to this recommendation may be corrected.

Draft B. (a) When the name is a modern patronymic and ends in a, the letter e is added (thus balansae from Balansa).

(b) When the name ends in any other letter, the letter i is added (thus sonnei from Sonne, novyi from Novy, welchi from Welch.)

Comment. The following statement was approved at the 5th Microbiological Congress for inclusion in Recommendation 27-d.

Recommendation 27-d. When the personal name is already Latin or Greek or has been latinized the appropriate Latin genitive should be used.

Draft Proposal 49. Substitute the following revision for Recommendation 27-h.

Recommendation 27-h. Names of taxa and specific epithets are often compound words, sometimes formed from Latin stems, more often from Greek stems, some-

times (less correctly) from stems from two different languages. Such compound words formed from the same stems may differ only in the connecting vowels.

a. In the formation of compound names of taxa and of specific epithets from the Latin the preferred connecting vowel is i. Such compound names differing in spelling only by having the connecting vowel i or o are to be regarded as orthographic variants. Names of taxa which are such orthographic variants and based upon different types are to be regarded as homonyms. The spelling used for each taxon or specific epithet should be that used by the author when the compound was validly published.

b. The combining vowel in Greek compounds in which the first component is a noun (substantive) or adjective, is usually o. It may be omitted if the second component begins with a vowel. It is omitted when the first component ends in y, e.g. glycyphyllus. Another combining vowel may be used if there is good Greek precedent, e.g. as in Corynebacterium. Names of taxa or of specific epithets which are Greek compounds and differ only in the presence or absence of the combining vowel o, or have another combining vowel, are to be regarded as orthographic variants. If the names are based upon different types they are to be regarded as homonyms. The correct spelling is that used by the author of the name in its initial and valid publication.

c. Compound words derived from two or more languages (nomina hybrida) are to be regarded as orthographic variants if they differ only in the combining vowel. If two compounds are names of taxa having different types they should be regarded as homonyms. The spelling first used by an author in the valid publication of a name should govern.

Comment. Faulty or alternative spelling of Latin words, faulty or alternative transliteration of Greek to Latin and faulty or alternative changing of Greek gender and oblique case endings into corresponding Latin endings

frequently make choices necessary between words having alternative spellings. It is suggested that a new recommendation be added to Rule 27 to give guidance in the making of choices.

Draft Proposal 50. Consider the approval of the following new Recommendation.
Recommendation 27-j. When it is necessary to choose between words which have been validly published as names of taxa or as specific epithets and which differ in spelling only because of faulty or alternative spelling of Latin words, or because of faulty or alternative transliterations of Greek to Latin, or because of alternative transfer of endings denoting gender or oblique cases (particularly the genitive) from Greek to Latin, it is recommended that choices be governed by the provisions of Appendix A to this Code, q.v.

Draft Proposal 51. It is proposed that consideration be given to the inclusion of an Appendix to the Code implementing Recommendation 27-j above. See p. 70 for text of proposed Appendix.

Draft Proposal 52. The following statement is proposed for consideration as a new Recommendation.
Recommendation 27-k. Words transliterated and latinized from languages that do not use the Latin alphabet are to be regarded as orthographic variants if they differ only in the transliteration. Such orthographic variants used as names of taxa based upon different types are to be regarded as homonyms.

Draft Proposal 53. The following statement is proposed for consideration as a new Recommendation.
Recommendation 27-l. Names of taxa and specific epithets differing only in presence or suppression of diacritical marks, transliteration of the German umlaut or the use of special letters are to be regarded as orthographic variants and, when based upon different types, they should be treated as homonyms. Words not formed in conformity with Recommendation 27c and 27d may be corrected.

Draft Proposal 54. The following statement is prepared for consideration as a new Recommendation.
Recommendation 27-m. A name or epithet from a non-Latin or a non-Greek word which does not have an ending conforming to that of one of the Latin declensions and which has not been latinized by the addition of a Latin ending shall be regarded as a non-declinable Latin noun. Two or more names derived from the same word, one with a Latin ending, the other not, are orthographic variants, and when based upon different types they should be treated as homonyms.

Draft Proposal 55. It is proposed that consideration be given to the inclusion of a new recommendation suggesting that authors of new names of taxa or of new epithets involving transliteration from the Greek conform to the recommendations of the proposed Appendix A.
Recommendation 27-n. Authors of new names of taxa or of new specific or infraspecific epithets derived from the Greek are urged to transliterate Greek words or stems into Latin form by adherence to the recommendation of Appendix A, q. v. For text See p. 63.

Rule 28.

Comment. There have been some questions raised as to the exact effect and meaning of the last sentence of Rule 28(2), which reads:-
"Generic names which are modern compounds formed from two or more Greek or Latin words take the gender of the last. If the ending is altered, however, the gender will follow it." It is proposed that the statement be clarified by emendation and that suitable illustrations be included.

Draft Proposal 56. It is proposed that consideration be given to the emendation of a portion of Rule 28 as follows:-
Rule 28(2). Generic and subgeneric names which are modern compounds formed from two or more Greek or Latin words take the gender of the last. If the ending is altered, the gender is that of the new ending in the language of origin.

Chapter 4.
Provisions for Exceptions to the Rules and for the Interpretation and Modification of Rules.

Comment. It is not always possible for all members of the International Committee on Bacteriological Nomenclature to attend the triennial meetings of the Committee. Nor is it always possible for all Commissioners of the Judicial Commission to meet with the Commission. It has seemed wise to adopt amendments to the pertinent Provisions to make possible the selection of alternates for Commissioners and for Committee Members so that they may be present at the time of the meetings, when the regular members are absent.

Draft Proposal 57. It is proposed to amend Provision 4, by inserting after Par. 2 the following:-

Provision 4. Following the second paragraph. If a member of the International Committee on Bacteriological Nomenclature cannot attend the meetings of the Committee, an alternate having all of the rights of an appointed member will be chosen in accordance with the following provisions:-

a. The national microbiological society which the member represents shall have the right to nominate an alternate.
b. If no nomination is made by the national society, the member himself shall have the right to nominate an alternate.
c. If neither the national society nor member nominates an alternate, the Chairman of the Committee with the Permanent Secretaries will nominate.

All nominations for alternates by national societies, or by members shall be in writing, and should be in the hands of one of the Permanent Secretaries before the first meeting of the Committee.

All nominations for alternates shall be presented at the first meeting of the Committee, and nominees elected by vote of the Committee will serve as alternates.

Comment. Provision 4, Section B., Subsection 8 places the responsibility for transmitting reports of subcommittees on the Permanent Secretaries of the International Committee on Bacteriological Nomenclature. It is suggested that this is more appropriately the function of the chairmen and the secretaries of the subcommittees.

Draft Proposal 58. Delete Provision 4, Section B, Subsection 8 and substitute the following:
Provision 4, Section B, Subsection 8. One or other of the Permanent Secretaries shall be designated a member of each subcommittee, and shall be responsible for advising the specialist subcommittees on the interpretation of the International Bacteriological Code of Nomenclature.

Comment. The relationships and duties of the several subcommittees have not been defined. It is proposed that there be added under Provision 4 a new Section D.

Draft Proposal 59. Insert after Provision 4, Section C, the following:
Provision 4, Section D. Taxonomic subcommittees of experts authorized by Provision 4, Section C, subsection 4, shall work under the following rules:

1. The chairman and secretary shall be elected by members of the subcommittee, and shall hold office for six years. After holding office they shall be eligible for re-election.
2. Ordinary members of the subcommittee shall be appointed by the International Committee. Between congresses, the chairman and secretary, acting in agreement, may co-opt as temporary members specialists who can contribute substantially to the work of the subcommittee. At the next congress the names of temporary members shall be submitted to the International Committee, which shall determine whether they shall become ordinary members.
3. One of the secretaries of the International Committee shall be an ex-officio member of each subcommittee, but shall not have voting powers.
4. Each subcommittee shall meet at each International

Congress and shall review its membership. The names of members who have retired, or have ceased to interest themselves in the work of the subcommittee, or who have died, shall be deleted from the membership list. The subcommittee shall, if it desires, replace the inactive members by more active experts, but it is not essential to maintain the membership at a definite number.

5. The chairman and secretary of each subcommittee will be jointly responsible for the presentation of a report to the International Committee. This report, if approved by the International Committee, will be published in the International Bulletin of Bacteriological Nomenclature and Taxonomy. The report should be accompanied by an up-to-date list of names and addresses of members of the subcommittee.

6. A subcommittee may create one or more subgroups to study particular problems. Each subgroup shall have a chairman appointed by the subcommittee. At least two-thirds of the members of each subgroup shall be appointed by the subcommittee, but need not themselves be members of the subcommittee; up to one-third may be co-opted as experts, at the invitation of the subgroup's chairman.

7. When votes are called for in subcommittees or subgroups, a simple majority shall suffice; in the event of a tie the chairman shall have a casting vote. If members wish to record a unanimous decision, a fresh vote may be called for. Votes shall be recorded by a show of hands unless a secret ballot is demanded by at least one-quarter of the members present.

8. Members who cannot attend meetings of subcommittees may send alternates to act for them. An alternate should be provided by the member with a written authority which will entitle him to record a vote on the members behalf. Expert observers may

be introduced by members but do not have voting rights.

9. Between congresses the work of the subcommittees will be conducted by correspondence; when votes are called for, each ballot paper will be signed by the member; unsigned papers will not be counted.

Draft Proposal 60. It is proposed to amend Provision 5, by inserting the following after Par. 1.

Provision 5. Following the first paragraph. If a Commissioner cannot attend the meetings of the Judicial Commission, an alternate having all of the rights of a Commissioner will be chosen in accordance with the following provisions:

a. The Commissioner himself shall have the right to nominate an alternate.
b. If no nomination is made by the Commissioner, the Judicial Commission will elect an alternate from members of the Committee on Bacteriological Nomenclature attending the Congress.

All nominations shall be in writing and in the hands of the Chairman of the Judicial Commission before the first meeting of the Commission. All nominations for alternates shall be presented at the first meeting of the Commission and nominees elected by vote of the Commission will serve as alternates.

TRANSLITERATION OF GREEK WORDS FOR USE IN NOMENCLATURE IN MICROBIOLOGY

Proposal for Emendation of the International Bacteriological Code of Nomenclature.

Editorial Board

A discussion of some of the problems of transliteration of Greek to Latin in the formation of names of bacterial taxonomic groups was presented in this BULLETIN (1). The sources and types of confusion in nomenclature arising from various methods of transliteration were pointed out. A tentative outline of a code for transliteration was published and criticisms invited. It was suggested that the statement, when finally formulated by the Judicial Commission and approved by the International Committee for Bacteriological Nomenclature, be included as an appendix to the International Bacteriological Code of Nomenclature and that there be inserted in the Code itself a recommendation advising author observance.

All suggestions coming to the Editorial Board have been carefully considered. Every effort has been made correctly to interpret classic Latin usage, and to conform to outlines as proposed by Linnaeus (2) and as published in abbreviated form in treatises on botanical and zoological nomenclature. Two draft proposals are made for emendation of the Code. When put in acceptable form by the Judicial Commission, the proposals will be presented for consideration and action by the International Committee on Bacteriological Nomenclature at its approaching meetings at the time of the VI International Congress for Microbiology.

DRAFT PROPOSALS: It is proposed:-

1. That Recommendation 27-a of the International Bacteriological Code of Nomenclature be deleted. This Recommendation now reads: "When a new name is derived from a Greek word containing the spiritus asper (rough breathing), this should be transcribed as the letter h."

2. That the following Recommendation be substituted for R 27-a:-
"When a new name or epithet for use in bacteriological nomenclature is derived from a Greek word, the transcription to Latin form should conform to classic usage. To assist authors of such new names and epithets in interpreting good usage, Appendix A to this Code may be used as a guide. If a later author corrects the spelling of a name or epithet incorrectly transliterated from the Greek, the correctly spelled word may be regarded as a legitimate orthographic variant of the name or epithet."

3. That the following statement outlining the approved transliteration from Greek to Latin form be considered by the Judicial Commission, and that, when approved, shall be recommended to the International Committee for inclusion as Appendix A to the International Bacteriological Code of Nomenclature.

PROPOSED APPENDIX A.

Authors desiring to use Greek words in the formation of epithets and names to be introduced into bacteriological nomenclature are advised to transliterate such words into Latin form in conformity with recognized usage as follows:

Greek A, α (alpha) Latin A, a

ἀκτις ἀκτῖνος - actis, actinis — Actinomyces

The Greek α is the first letter of two diphthongs.

αι - ae. αἷμα , αἵματος - haema, haematis. — haematoides

Rarely and less correctly transliterated as ai as in σφαῖρα - sphaira, whence Sphaira, a protozoan generic name.

Occasionally αι does not constitute a diphthong, as in ἀΐστωρ - aistor and is then transliterated ai.

Not infrequently αι has been incorrectly transliterated as e as in Hemophilus.

αυ - au αυξω - auxo — auxinophilus

ᾱ αί - ha and hae respectively, as in

ἅλς , ἁλός - hals, halis — halophilus

αἷμα -haema — Haemophilus

Greek B, β (beta) Latin B, b

βακτήριον - bacterium — Bacterium

Greek Γ, γ (gamma) Latin G, g

γάλα, γάλακτος - gala, galactis — Galactococcus

When γ precedes γ, κ, ξ, χ, it is transliterated as n.

γγ - ng ἀγγεῖον - angium — Archangium

γκ - nc ἐγκέφαλος - encephalus — encephaloides

γξ - nx σφίγξ - sphinx — Sphinx

γχ - nch σύγχυσις - synchysis — synchyseus

Greek Δ, δ (delta) Latin D, d

διπλοῦς - diplus — Diplococcus

Greek E, ε (epilson) Latin E, e

ἔντερον - enterum — Enterococcus

The Greek ε is the first letter of two Greek

diphthongs.

ει - i, θεῖον - thium	Thioploca
More rarely ει - e as ζεία - zea	zeae
ευ - eu εὐς - eus	Eubacterium
ἑ - he ἕλκος - helcus	helcogenes

Greek Z, ζ (zeta) Latin Z, z

ζῷον - zoum	Zooglocea

Greek H, η (eta) Latin E, e

κήρινος - cerinus	cerinus

Greek nouns ending in η are feminine. When transliterated they were placed in the first declension with ending a or e as

χαίτη - chaete or chaeta	Spirochaeta
ἡ - he ἥλιος - helius	helianthi

Greek Θ, θ (theta) Latin Th, th

θρίξ - thrix	Erysiplelothrix

Greek I, ι (iota) Latin I, i

ἰχθύς - ichthys	ichthyosmius
ἵππος - hippus	hippopotami

Greek K, κ (kappa) Latin K, k

κορύνη - coryne	Corynebacterium

The Greek κ is sometimes incorrectly transliterated as k, as βακτήριον - bakterium.

Greek Λ, λ (lambda) Latin L, l

λευκός - leucus	Leuconostoc

Greek M, μ (mu) Latin M, m

μικρός - micrus	Micrococcus

Greek N, ν (nu) Latin N, n

νεκρός -	necrus	necrophorus

Greek Ξ, ξ (xi) Latin X, x

μύξα -	myxa	Myxococcus

Greek O, o (omicron) Latin O, o

ὄζαινα -	ozaena	ozaenae

The Greek o is the first letter of two diphthongs

οι - oe	οἴδημα - oedema	oedematiens
ου -	πούς - pus	Rhizopus

In the Greek, final -ον is usually the ending of a neuter noun or adjective. Such words were placed in the second Latin declension, with the ending usually -um, occasionally -on, as in

ἀγγεῖον - angium	Archangium
περσικόν - persicon	Lycopersicon

Final -ος is a masculine nominative ending for nouns and adjectives. Such words were placed in the second Latin declension, with the ending usually -us, occasionally -os, as in

φίλος - philus	hydrophilus

Final -os is also found in Greek genitives. Such words were placed in the third Latin declension with the ending usually -is, occasionally -os as in

ἐρυσίπελατος - erysipelatis	erysipelatis
ὗς, ὑός - hys, hyos	hyos
ὁ - ho ὅρμος - hormus	Hormiscium

Greek Π, π (pi) Latin P, p

πλάνος -	planus	Mycoplana

In composition, π followed by a spiritus asper becomes φ - ph.

Greek Ρ, ρ (rho) Latin R, r

σπεῖρα - spira — Spirochaeta

Initial ῥ always has the spiritus asper and is transliterated rh, as in

ῥόδον - rhodum — rhodochrous

In composition, when the second component begins with ῥ, and the preceding component ends in a vowel, the ρ is doubled, and the second ῥ retains the spiritus asper.

διάῤῥοια - diarrhoea — diarrhoeae

Greek Σ, σς (sigma) Latin S, s

σφαιρικός - sphaericus — sphaericus

Greek Τ, τ (tau) Latin T, t

τέτρα - tetra — tetragenus

In composition, τ followed by a vowel having a spiritus asper becomes θ - th.

Greek Υ, υ (upsilon) Latin Y, y

μύκης, μύκητος - myces, mycetis — Schizomycetes

The Greek υ is the second letter of three Greek diphthongs.

αυ - au αὔξη - auxe — auxinophilus

ευ - eu εὐ - eu — Eubacteriales

ου - u πούς - pus — Rhizopus

ὑ - hy ὕδρο - hydro — Hydrogenomonas

Greek Φ, φ (phi) Latin Ph, ph

φαγός - phagus — Phagus

Greek Χ, χ (chi) Latin Ch, ch

χλαμύς, χλαμύδος - chlamys, chlamydis — Chlamydobacteriales

Greek Ψ, ψ (psi) Latin Ps, ps

ψευδής - pseudes Pseudomonas

Greek Ω, ω (omega) Latin O, o

ᾠόν - oum Oöspora

ALTERNATIVE SPELLINGS OF NAMES AND EPITHETS IN MICROBIOLOGY.

Proposal for Emendation of the International Bacteriological Code of Nomenclature.

Editorial Board.

It is proposed that the following statement, which outlines recommendations concerning the choice of words with alternative spellings used as names or epithets in microbiology, be considered for inclusion as Appendix B to the International Bacteriological Code of Nomenclature.

PROPOSED APPENDIX B.

Alternative Spellings of Names and Epithets in Microbiology.
Orthographic Variants.

Alternative spellings (orthographic variants) of names or epithets found in the literature of microbiology frequently have resulted from alternative or faulty spelling of Latin words, from faulty or alternative transliteration of Greek words into Latin form, or from faulty or alternative endings used to indicate gender or case when Greek words are transliterated. Authors are urged to make choices in conformity with the following recommendations.

(a) Alternative spelling of names and epithets taken from the Latin.

1. Classic Latin precedent should be followed in the formation of new names of taxa derived from Latin words having alternative spellings involving the two diphthongs ae and oe. The spelling of names of taxa in which the classic spelling is not observed may be corrected.

2. In formation of new names of taxa from Latin words spelled classically with an f but alternatively with ph, the f spelling is to be preferred. Names of taxa of Latin derivation spelled by the author with ph may be corrected.

(b) Alternative spelling of names and epithets taken from the Greek.

1. In the formation of a compound name or specific epithet from a Greek word which increases in the genitive, it is preferable to use the longer stem unless there is good Greek precedent for the use of the alternative stem or combining form; words otherwise similar, derived one from the short and one from the long form are not to be regarded as orthographic variants. If based upon different types they are not to be regarded as homonyms. However, when the word constitutes the final component of a generic name, the longer stem should be used in the formation of the names of higher taxa; if the shorter stem has been used the spelling should be corrected.

2. Of two orthographic variants arising from alternative transliterations of ει to i or to e, the spelling used by the author in the first valid publication should be accepted. If based upon different types they should be regarded as homonyms.

3. Names of taxa with alternative spellings arising from transliteration of η to e or to a are to be regarded as orthographic variants. If based upon different types, they are to be treated as homonyms. The preferred spelling is that used in the first valid publication of the name.

4. In the formation of names of taxa and of specific epithets the Greek diphthong αι should be transliterated as ae. Words in which the diphthong αι is transliterated as e are to be regarded as orthographic variants of those correctly transliterated. Orthographic variants based upon different types are to be regarded as homonyms. Names of taxa in which αι has been improperly transliterated may be corrected.

5. In a Greek compound in which the second or later component has ῥ as the initial letter and in which

the component is preceded by a vowel, the ρ should be doubled and transliterated as rrh. A transliteration as r or rh is to be regarded as an orthographic variant, and if the taxon bearing the names are based on different types they should be treated as homonyms. Orthographic variants of this kind may be corrected.

(c) Alternative spellings of gender and case endings.

1. Epithets and names of taxa with alternative spellings arising from the use in Latin of the endings -us and -os for transliterated masculine nouns and adjectives which in the Greek end in -ος are orthographic variants. Similarly the alternative spellings arising from the use in Latin of the endings -um and -on for transliterated neuter nouns and adjectives which in the Greek end in -ον are orthographic variants. When based upon different types they should be regarded as homonyms. When used as the name of a taxon the correct spelling is that used by the author in the first valid publication. When used as an adjectival specific epithet the Latin endings -us and -um are to be preferred. Specific epithets may be corrected to the preferred spelling.

2. Greek nouns used as specific epithets in the genitive may have alternative spellings arising from the use in Latin of the endings -is and -os for transliterated Greek nouns whose genitive case ending in the Greek is -ος they are to be regarded as orthographic variants. The preferred spelling is -is, and variants may be corrected.

SUMMARY OF OPINIONS AND PRELIMINARY STATEMENTS.

For Consideration by the Judicial Commission and by the International Committee on Bacteriological Nomenclature.

Editorial Board.

Since January 1951 the Judicial Commission has considered five Preliminary Statements which outlined requests for OPINIONS, and has issued five OPINIONS. In addition it has prepared and reviewed additional Preliminary Statements but for which no formal OPINIONS have yet been issued. These OPINIONS are all subject to review at the next following meeting of the International Committee. It has been thought desirable therefore to prepare the following summary statement outlining briefly the several OPINIONS rendered and the Preliminary Statements that should lead to formulation of OPINIONS just preceding or during the Sixth International Congress for Microbiology.

Summary of Opinions Issued.

OPINION 1. (This Bulletin 1:35-36. 1951.) The spelling megaterium of the specific epithet in Bacillus megaterium deBary 1884 is to be preferred to the spelling megatherium. (No formal request for review).

OPINION 2. (This Bulletin 1:37-38. 1951). The combining form or stem of the last component of names ending in -bacterium is -bacteri, of those ending in -bactrum or -bactron is -bactr, and of those ending in -bacter is -bacter. Family names derived from such generic names have respectively the endings -bacteriaceae, -bactraceae and -bacteraceae. (No formal request for review).

OPINION 3. (This Bulletin 1 (No.2):84-85 (36-37). The names of bacterial genera which end in -bacter should be regarded as having the masculine gender. (No formal request for review).

File No. 3. The gender to be assigned to names of bacterial genera which end in -bacter. (This Bulletin 1 no.2: 84-85 (36-37). 1951)). The proposals of this Preliminary Statement were approved by the Judicial Commission, and issued as OPINION 3 (See above for wording). (Action completed).

OPINION 4. (This Bulletin 1:145-146. 1951).

(1). Bacterium Lehmann and Neumann 1896 is recognized as a nomen generis conservandum (conserved generic name) in bacteriology.

(2). Bacterium coli (Migula) Lehmann and Neumann 1896 (Bacterium coli commune Escherich 1885, Bacillus coli Migula 1900) is recognized as the type species of the genus Bacterium Lehmann and Neumann, 1896.

(3). The family name Bacteriaceae is recognized as a nomen familiae conservandum (conserved name of a family) with the type genus Bacterium Lehmann and Neumann.

(4). The type culture or standard culture of the type species of the genus Bacterium will be approved and characterized by the Judicial Commission upon the basis of recommendations prepared by a Committee of Experts appointed by the Chairman of the International Committee on Bacteriological Nomenclature and including in its membership the Curators of at least three type culture collections.

(5). The generic name Bacterium Lehmann and Neumann is conserved against the names of all genera which include the type species of the genus, Bacterium coli. (Formal request has been made for review by the International Committee).

File No. 5. Status of the generic name Bacterium, the species name Bacterium coli and the family name Bacteriaceae (This Bulletin 1 no.2:64-79 (16-31). 1951). The proposals of this Preliminary Statement were approved by the Judicial Commission, and issued as OPINION 4 (See above, also this Bulletin 1:145-146. 1951). An appeal from this OPINION to the International Committee was published by Borman (This Bulletin 2:60-63. 1952). For other statements relative to OPINION 4 see:-

Kauffmann and Edwards. (This Bulletin 2:2-8. 1952).
Taylor (This Bulletin 2:92-93. 1952).
Cowan (Journ. Bact. 65:111-112. 1952).
Kauffmann (This Bulletin 3:126-127. 1953).
(OPINION No. 4 will be reviewed by the International Committee on Bacteriological Nomenclature.)

OPINION No. 5. (This Bulletin 2:121-122. 1952).

(1). The generic name Pseudomonas Migula 1894 is to be conserved and placed in the list of nomina generum conservanda.

(2). The generic name Pseudomonas Migula 1894 is to be associated with the species designated and described by Migula 1895.

(3). The type species of the genus Pseudomonas Migula 1894 is Pseudomonas aeruginosa (Schroeter) Migula 1900 (Bacterium aeruginosum Schroeter 1872, Bacillus pyocyaneus Gessard 1882, Pseudomonas pyocyanea Migula 1895. (No formal request for review.)

File No. 7. Status of Pseudomonas Migula 1884 as a generic name and of Pseudomonas aeruginosa (Schroeter) Migula 1900 as type species. (This Bulletin 1:41-42. 1951). The proposals of this Preliminary Statement were approved by the Judicial Commission, and issued as OPINION 5 (See above for wording.) (Action completed.)

Preliminary Statements.
(No OPINIONS yet issued).

File No. 4. Stems and combining forms of opsis, ops and ōps. (This Bulletin 1:113-125. 1951). Two proposals are outlined which may be summarized as follows:-

(1). Endeavor to secure a uniform ruling in bacteriology, botany and zoology relative to combining forms or stems of names of taxa or of epithets ending in -opsis, -ops or -ōps and relative to the spelling of names of higher taxa derived from them. (No action has been taken. It is suggested that the problem be presented to the appropriate committees in botany and zoology for consideration.

(2). Draft Proposal for an OPINION. The combining form (stem) of the name of a genus which ends in -opsis is -ops-, in -ops or -ōps is -op-. The genitive ending of names ending in -opsis is -opsis, of names ending in -ops or -ōps is -opis. Names of higher taxa derived from generic names ending in -opsis, ops or -ōps are formed by adding the ending characteristic of the higher taxon to the appropriate combining form. For example, family names derived from generic names ending in -opsis should end in -opsaceae, and those derived from names ending in -ops or -ōps should end in -opaceae. Specific epithets in the genitive and names of higher taxa formed on the assumption of other spellings of combining forms are to be regarded as unintentional orthographic errors which may be corrected. (Action to be determined by the Judicial Commission.)

File No. 6. The correct spelling of the specific epithet in Micrococcus lysodeikticus Fleming. (This Bulletin 1:39-40). The Editorial Board found that the Rules of the International Bacteriological Code were not sufficiently explicit to make present formulation of an OPINION satisfactory. Four proposals (in part alternative proposals) were submitted to the members of the Judicial Commission for consideration. They suggested preparation of a Draft Opinion and three Draft Proposals for emendation of the Bacteriological Code. These suggestions were approved. In brief summary these were:-

(1). Preparation of an OPINION to the effect that an author's spellings arising from the ignoring of the classic transliteration from Greek to Latin are not to be changed unless there is clear evidence of a typographical error or of an unintentional orthographic error.

(2). Preparation of a Draft Proposal for an appendix to the Bacteriological Code outlining clearly the rules imposed by classic tradition for the transliteration of Greek to Latin. (Draft Proposal No. 55 (this Bulletin 3:58. 1953) has been proposed for consideration.)

(3). Preparation of a Draft Proposal of a new Recom-

mendation for the Bacteriological Code urging all authors to follow the classic tradition in the transliteration of Greek words into Latin form for use in naming of taxa. (Draft Proposal No. 55 (this Bulletin 3:58. 1953) has been prepared for consideration.)

(4). Preparation of a Draft Proposal of a rule fixing the correction of the spelling of names of taxa derived from the Greek and not transliterated in agreement with classic tradition. (Draft Proposal Nos. 50, 51, 52, 53 (this Bulletin 3:59. 1953) has been prepared for consideration.)

File No. 8. Chlorobacterium Guillebeau 1890 vs. Chlorobacterium Lauterborn 1915 and the status of Chlorobacteriaceae Lauterborn 1913. (This Bulletin 1:43-44. 1951).

A series of five suggestions were prepared by the Editorial Board for consideration by the Judicial Commission.

(1). Chlorobacterium Lauterborn 1915 shall be conserved and placed in the list of genera conservanda.

(2). Chlorobacterium Guillebeau 1890 shall be rejected and placed in the list of genera rejicienda.

(3). Chlorobacterium Lauterborn shall be designated as the type genus of the family Chlorobacteriaceae Lauterborn 1913 emend. 1915.

(4). Chlorobacterium symbioticum Lauterborn 1915 is the type species of the genus Chlorobacterium Lauterborn 1915.

(5). Chlorobacterium lactis Guillebeau 1890 shall be rejected and placed in the list of nomina specifica rejicienda.

(6). Chlorobacteriaceae Lauterborn 1913 emend. 1915 shall be conserved and placed in the list of nomina familiarum conservanda.

(2). Draft Proposal for an OPINION. The combining form (stem) of the name of a genus which ends in -opsis is -ops-, in -ops or -ōps is -op-. The genitive ending of names ending in -opsis is -opsis, of names ending in -ops or -ōps is -opis. Names of higher taxa derived from generic names ending in -opsis, ops or -ōps are formed by adding the ending characteristic of the higher taxon to the appropriate combining form. For example, family names derived from generic names ending in -opsis should end in -opsaceae, and those derived from names ending in -ops or -ōps should end in -opaceae. Specific epithets in the genitive and names of higher taxa formed on the assumption of other spellings of combining forms are to be regarded as unintentional orthographic errors which may be corrected. (Action to be determined by the Judicial Commission.)

File No. 6. The correct spelling of the specific epithet in Micrococcus lysodeikticus Fleming. (This Bulletin 1:39-40). The Editorial Board found that the Rules of the International Bacteriological Code were not sufficiently explicit to make present formulation of an OPINION satisfactory. Four proposals (in part alternative proposals) were submitted to the members of the Judicial Commission for consideration. They suggested preparation of a Draft Opinion and three Draft Proposals for emendation of the Bacteriological Code. These suggestions were approved. In brief summary these were:-

(1). Preparation of an OPINION to the effect that an author's spellings arising from the ignoring of the classic transliteration from Greek to Latin are not to be changed unless there is clear evidence of a typographical error or of an unintentional orthographic error.

(2). Preparation of a Draft Proposal for an appendix to the Bacteriological Code outlining clearly the rules imposed by classic tradition for the transliteration of Greek to Latin. (Draft Proposal No. 55 (this Bulletin 3:58. 1953) has been proposed for consideration.)

(3). Preparation of a Draft Proposal of a new Recom-

mendation for the Bacteriological Code urging all authors to follow the classic tradition in the transliteration of Greek words into Latin form for use in naming of taxa. (Draft Proposal No. 55 (this Bulletin 3:58. 1953) has been prepared for consideration.)

(4). Preparation of a Draft Proposal of a rule fixing the correction of the spelling of names of taxa derived from the Greek and not transliterated in agreement with classic tradition. (Draft Proposal Nos. 50, 51, 52, 53 (this Bulletin 3:59. 1953) has been prepared for consideration.)

File No. 8. Chlorobacterium Guillebeau 1890 vs. Chlorobacterium Lauterborn 1915 and the status of Chlorobacteriaceae Lauterborn 1913. (This Bulletin 1:43-44. 1951).

A series of five suggestions were prepared by the Editorial Board for consideration by the Judicial Commission.

(1). Chlorobacterium Lauterborn 1915 shall be conserved and placed in the list of genera conservanda.

(2). Chlorobacterium Guillebeau 1890 shall be rejected and placed in the list of genera rejicienda.

(3). Chlorobacterium Lauterborn shall be designated as the type genus of the family Chlorobacteriaceae Lauterborn 1913 em. 1915.

(4). Chlorobacterium symbioticum Lauterborn 1915 is the type species of the genus Chlorobacterium Lauterborn 1915.

(5). Chlorobacterium lactis Guillebeau 1890 shall be rejected and placed in the list of nomina specifica rejicienda.

(6). Chlorobacteriaceae Lauterborn 1913 emend. 1915 shall be conserved and placed in the list of nomina familiarum conservanda.

As a result of correspondence with the Commissioners, it was concluded that the immediate needs of nomenclature could be met without conservation of the family name. (See (this Bulletin 2:110-113. 1952).

No definitive vote has yet been recorded. As a result of suggestions and comments submitted by Commissioners it seems possible to formulate a draft proposal which will conserve Chlorobacterium Lauterborn, fix its type species and make unnecessary the conservation of the family name. The following will be considered at the Rome meeting of the Judicial Commission.

Draft Proposal. The generic name Chlorobacterium Lauterborn 1915 should (should not) be conserved and placed in the list of nomina generum conservanda. The type species is Chlorobacterium symbioticum Lauterborn 1915. The generic name Chlorobacterium Guillebeau 1890 should (should not) be rejected and placed in the list of nomina generum rejicienda.

File No. 23. The status of the generic names Micrococcus and Staphylococcus Breed (This Bulletin 2: 85-88. 1952.) concluded that the type species of the genus Micrococcus Cohn 1872 is Micrococcus luteus (Schroeter) Cohn. The paper by Breed did not request an OPINION. Cowan suggested that the generic name Staphylococcus Rosenbach be conserved against Micrococcus Cohn with the type species Staphylococcus aureus Rosenbach.

Gibson (This Bulletin 3:128-132.1953) has requested an OPINION which would definitely fix the status of the generic names Micrococcus and Staphylococcus. No Preliminary Statement has been published. If time permits, a Preliminary Statement will be prepared for presentation at the meeting of the Judicial Commission in Rome (1953). The following may be considered.

Draft Proposal.

(1). The generic name Staphylococcus Rosenbach 1884 is conserved and placed in the list of nomina generum

conservanda. The type species is Staphylococcus aureus Rosenbach 1884. The type or standard culture is that of the strain known as FBA 209-P, listed in the National Collection of Type Cultures in London as 7447 and in the American Type Culture Collection, Washington, D.C. as 7338P.

(2). The generic name Staphylococcus Rosenbach 1884 is also specifically conserved against Micrococcus Cohn with its type species Micrococcus luteus (Schroeter) Cohn.

Comment: The approval of the second draft proposal above would make possible the recognition of two genera, Micrococcus and Staphylococcus based upon different type species, but would ensure the legitimacy of Staphylococcus if the two genera are merged.

File 28. The nomenclature of the bacterium found in granuloma venereum. Dr. Bier (This Bulletin 3:17-20. 1953) concludes that the correct name for the organism present in the lesions of granuloma venereum is Calymmatobacterium granulomatis Aragão and Vianna 1913. The nomenclatural confusion in the literature should be corrected. The Editorial Board suggest consideration of the following proposal.

Draft Proposal. The species names Encapsulatus inguinalis Bergey et al. 1923, Klebsiella granulomatis Bergey et al. 1925. Donovania granulomatis Anderson, de Monbreun and Goodpasture 1945 are later synonyms of Calymmatobacterium granulomatis Aragão and Vianna 1913.

File No. 37. The correct species name of the Streptococcus of bovine mastitis. (This Bulletin 2:104-106. 1952). Prof. Dr. Haupt gives evidence in support of his proposal that the correct name of the Streptococcus of bovine mastitis is Streptococcus agalactiae Kitt. This proposal is questioned by Prof. Hansen (This Bulletin 2:21-23. 1953) who suggests that the name given by Kitt Streptococcus agalactiae contagiosae, may be regard-

ed as a trinomial, and that consideration should be given to the name Streptococcus agalactiae Lehmann and Neumann. A preliminary statement will be prepared, if practicable for consideration at the Rome meeting of the Judicial Commission.

File No. 39. Conservation of the generic name Rickettsia and of the specific epithet prowazekii in the species name Rickettsia prowazekii. Request for an OPINION. Cornelius B. Philip. (This Bulletin 2:69-70. 1952). A preliminary statement will be prepared for presentation at the Rome meeting of the Judicial Commission. The request suggests the preparation of the following draft proposal.

Draft Proposal. The generic name Rickettsia da Rocha Lima 1916 should be conserved together with the name of the type species Rickettsia prowazekii da Rocha Lima 1916. These names should be included in the appropriate lists of nomina conservanda. These names are conserved against Stricheria Stempel 1916 and Stricheria jürgensi Stempel 1916.

File No. 41. The correct spelling of a specific epithet in the genus Shigella, equirulis versus equuli. Prof. Dr. Haupt (This Bulletin 2:107-109. 1952) presents evidence that the correct name is Shigella equuli (vanStraaten) Edwards. The evidence is so clear that no OPINION by the Commission seems to be required.

File No. 49. Status of Gallionella Ehrenberg as a generic name in bacteriology. A Preliminary Statement has been published (This Bulletin 2:96-103. 1952). Three draft proposals were published for consideration by the Judicial Commission as follows:-

Draft Proposals.

(1). Gallionella Ehrenberg is (is not) to be regarded as an orthographic variant of Gaillonella Bory.

(2). Gallionella Ehrenberg has (has not) as its type species Gallionella moniliformis and is (is not) available as a generic name in bacteriology with the type

species Gallionella ferruginea Ehrenberg.

(3). Didymohelix Griffith is (is not) the first legitimate name for the genus of bacteria including the Gallionella ferruginea Ehrenberg. Didymohelix Griffith should (should not) be designated as a nomen generum conservandum with the type species Didymohelix ferruginea (Ehrenberg) Griffith.

The publication of the revised International Code of Botanical Nomenclature publicized a recommendation by the botanist's subcommittee on Bacillariophyta that Gaillonella Bory 1823 be placed in the list of nomina rejicienda. This would seem to reject the later orthographic variant. The consequences of this rejection are discussed in a personal communication from a member (Dr. Ross) of the subcommittee (This Bulletin 3: 117. 1953). If Gaillonella is definitely rejected by the botanists, a proposal might be considered to make Gallionella Ehrenberg a conserved name with the type species G. ferruginea.

File No. 52. The generic names Müllerina and Drepanospira in bacteriology. (This Bulletin 2:9-10. 1952.) The draft proposal has not been finally acted upon by the Judicial Commission. The published draft proposal has been modified to read as follows:

Draft Proposal. The generic name Müllerina dePetschenko 1910 and the species name Müllerina paramecii de Petschenko 1910 were not accepted by the author, hence were not validly published and are without standing in nomenclature. The later names Drepanospira dePetschenko 1911 and Drepanospira muelleri dePetschenko were validly published and not later synonyms.

File No. 53. Status of the generic names Borrelina and Bollea. A request for an OPINION as to the correctness of the proposed replacement of the generic name Borrelina Paillot by Bollea Bergold (See Hughes, This Bulletin 3:116-118. 1953.) A Preliminary Statement will be prepared (if time permits) to be presented at the Rome meeting of the Judicial Commission. A possible statement of a draft proposal follows:-

Draft Proposal. The generic name Borrelina Paillot 1826 is conserved and placed in the list of nomina generum conservanda. The type species is Borrelina bombycis (Prowazek) Paillot 1926. Bollea Bergold 1953 is a later homonym of Bollea Reichenbach 1852,a genus in the family Amaryllidaceae (Index Kewensis 5(I):319. 1895) and of Bollea Parl. 1848, a genus of the family Orchidaceae (Index Kewensis 5(I):319. 1895) and hence illegitimate (Rule 24 (4) of the Bacteriological Code).

File No. 54. Shigella species nomenclature and citation of authority. (This Bulletin 1:147-149. 1951). This request for an opinion was submitted by J.S.K. Boyd and S.T. Cowan. It was accompanied by a copy of the recommendations of the Shigella Commission of the Enterobacteriaceae Subcommittee with the title "Nomenclature and Classification of the Dysentery Bacilli" (This Bulletin 1:150-157. 1951). The Editorial Board published a Preliminary Statement. (This Bulletin 1:158-166.) No definitve action has been taken by the Judicial Commission. The Shigella Commission made four nomenclatural proposals which may be summarized as follows:-

Proposal I. Strains of Shiga's dysentery bacillus, Schmitz' bacillus, and the Large-Sachs group become different serotypes of Shigella dysenteriae (Shiga) Castellani and Chalmers.

Proposal II. Mannitol-fermenting strains sharing common groups antigens become serotypes of Shigella flexneri Castellani and Chalmers.

Proposal III. Mannitol-fermenting strains...not sharing group antigens become Shigella boydii Ewing.

Proposal IV. Sonne's dysentery bacillus should remain Shigella sonnei (Levine) Weldin.

The following draft proposals have been published by the Editorial Committee for consideration and definitive action at its Rome meeting.

Draft Proposal 1. Shigella dysenteriae (Shiga) Castellani and Chalmers was (was not) validly published and is (is not) legitimate as the name of the dysentery bacterium described by Shiga 1898 (4). It is advisable that the term serotype be used to designate each taxonomic unit based upon common antigenic structure. There are (are no) nomenclatural obstacles to the inclusion of other organisms such as the "Schmitz' bacillus" and the "Large-Sachs group" in the species Shigella dysenteriae (Shiga) Castellani and Chalmers. There are no (are) nomenclatural reasons why this species should not be regarded as made up of several serotypes having certain common characteristics. A culture belonging to the species could be completely identified by naming it Shigella dysenteriae Serotype _____. If the serotype is given a number or a name, the author may be cited as in Shigella dysenteriae Serotype 1 Enterobacteriaceae Subcommittee. If a distinctive name is given to the serotype, the name could be written Shigella dysenteriae Serotype abc Smith to be followed when advisable by the antigenic formula.

If recognition of two or more taxonomic groups of serotypes within the species is desired, there appear to be no nomenclatural obstacles. Generally in biology such subdivision of species would be recognized as subspecies or varieties.

The statements of this Draft Proposal 1 with reference to recognition of subspecies, groups and serotypes have equal application in Draft Proposals 2, 3 and 4.

Draft Proposal 2. The specific epithet flexneri in the species name is (is not) to be designated an epithetum specificum conservandum in the species name Shigella flexneri, for the species first described as Bacillus dysenteriae Flexner.

Draft Proposal 3. Shigella boydii Ewing was validly published and is a legitimate species name. The epithet boydii in this name is (is not) to be designated as a epithetum specificum conservandum.

Draft Proposal 4. Shigella sonnei (Levine) Weldin was

validly published and is a legitimate species name. The epithet sonnei in this species name is (is not) to be designated as an epithetum specificum conservandum.

Draft Proposal 5. A type or standard culture is to be designated by a Committee of Experts and approved by the Judicial Commission for each of the species groups, subspecies (varieties) and serotypes recognized by the Enterobacteraceae Committee. Such cultures as far as possible shall be maintained in each of the national Type Culture Collections of micororganisms and in the International Shigella Center, Chamblee, Georgia, U.S.A.

File No. 57. Status of the species name Leptospira mitis. A request for an OPINION from the Leptospira Subcommittee. (This Bulletin 2:89-91. 1952). Leptospira mitis Mino 1938 was found to be a later synonym of L. bataviae Esseveld and Collier 1938.

Leptospira mitis Johnson 1942 was later proposed for another species. This is a later homonym of L. mitis Mino, and hence illegitimate.

Leptospira hyos Savino and Rennella 1944 was determined by Babudieri 1951 to be identical with L. mitis Johnson; the latter name therefore becomes a synonym of L. hyos. A more detailed Preliminary Statement will be prepared for consideration by the Judicial Commission at the Rome Meeting. A tentative draft proposal may be suggested.

Draft Proposal.

(1). Leptospira mitis Mino 1938 is a later synonym of L. bataviae and hence illegitimate.

(2). Leptospira mitis Johnson 1942 is a later homonym of L. mitis Mino 1938 and hence illegitimate.

(3). Leptospira hyos Savino and Rennella 1944 (syn. L. mitis Johnson non L. mitis Mino) on the basis of evidence submitted was validly published and is legitimate.

STATUS OF LISTERIA PIRIE 1940 AS A GENERIC NAME IN BACTERIOLOGY.

Preliminary Statement. File 49.

Editorial Board.

Becker (1) has noted that the generic name Listeria Pirie 1940 (2) is a later homonym of Listeria Necker 1790 (3) proposed for a genus of Spermatophyta, and hence illegitimate as a generic name in bacteriology. Inasmuch as the generic name Listeria Necker is not in current use in botany, while the name Listeria Pirie is widely accepted in bacteriology, it was suggested that Listeria Pirie 1940 be conserved and that Listeria Necker 1790 be placed in the list of nomina generum rejicienda.

Listeria Necker 1790 (3). This generic name was validly published to include segregates from the genus Oldenlandia in the spermatophyte family Rubiaceae. This segregation has not been generally accepted by botanists, and the name has not come into use.

Listeria R. Br. was cited by Sprengel 1817 (4). The citation is incorrect, for the name given by Brown 1813 (5) to a genus of the family Orchidaceae was Listera. The spelling Listeria may be regarded as an orthographic error.

Listeria Pirie 1940 (2). This generic name was proposed to replace the name Listerella Pirie 1927 (6) which was found to be a later homonym of Listerella Jahn 1906 (7). It is also a homonym of the later Listerella Cushman 1933 (8).

Apparently Listeria Pirie 1940 is a later homonym of Listeria Necker 1790 and illegitimate because based on a different type Listeria monocytogenes (Murray, Webb and Swann) Pirie (1940) (2).

The generic name Listeria Pirie 1940 replaced Listerella Pirie 1927 which had been widely used in bacteri-

ological and medical literature. A second change in the name of a bacterial genus of such economic significance would give rise to much confusion.

The name Listeria Necker has rarely, if ever, been used since it was proposed. The change of spelling of Listera R. Br. to Listeria by Sprengel may be dismissed either as an orthographic error or as a later orthographic variant. A suggestion has been made that the name Listeria Pirie 1940 be conserved against Listeria Necker 1790 and that concurrence in such conservation be requested through the appropriate international botanical committee.

DRAFT PROPOSAL. 1. Listeria Pirie 1940 (type species Listeria monocytogenes (Murray, Webb and Swann) Pirie 1940) shall be placed in the list of genera conservanda in the Schizomycetes.

2. The Committee on Bacteria authorized by the Stockholm Botanical Congress is asked to consider the proposal that Listeria Necker 1790 be placed in the botanical list of nomina generum rejicienda.

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BACTERIOLOGICAL NOMENCLATURE AND TAXONOMY

STATUS OF GENERIC NAMES OF BACTERIA PROPOSED BY TREVISAN.

Preliminary Statement. File 56.

Editorial Board.

Between the years 1842 and 1890 Trevisan proposed at least thirty-three names for genera and subgenera of bacteria. Many of these have come into common use, others have been abandoned or ignored. The evaluation and appropriate disposition of these names from the standpoint of validity of publication and of legitmacy is an important present problem. The Judicial Commission has been asked to review these names and to issue an opinion fixing the status of each. Some of Trevisan's papers were published privately or in journals not readily accessible. In preparation for a study of the problem, one of the most important of these contributions, "I Generi e le Specie delle Batteriacee" (1889) was reproduced by photo-offset in this BULLETIN (1). A study shows that it is necessary to consider each name separately; it is not possible to make any general pronouncement.

The names of the genera are herein arranged alphabetically, a brief statement concerning each is given, together with a draft proposal suggesting the status of each. These draft proposals fall into several categories. For each name consideration must be given to validity of publication. An examination of the several publications by Trevisan gives no reason to doubt that all of them were effectively published (Rule 11, Bacteriological Code). There is some doubt however as to the validity of publication (Rules 12, 13 Bacteriological Code) in some cases, such doubt being largely based upon the adequacy of the "reference to a previously and effectively published description". The legitimacy of each name also requires some examination (Rule 24, Bacteriological Code).

1. Babesia Trevisan 1889 (2 p. 29). An earlier request for an Opinion relative to the status of Babesia Trevisan had been received by the Judicial Commission, and a Preliminary Statement prepared. See this BULLETIN (3 p.).

2. Bacillus Trevisan 1889 (2 p. 12). For some unexplained reason, Trevisan cites himself as the author of the name Bacillus. In the list of synonyms he writes "Bacillus e Bacterium F. Cohn (1873)". The faulty ascription of authorship is corrected in the monograph by DeToni and Trevisan (4 p. 943) published later in 1889. Bacillus Cohn was made a genus conservandum by action of the Second International Microbiological Congress (5 p. 28). No draft proposal is necessary.

3. Bacteriopsis Trevisan 1885 (6 p. 103). A generic name proposed by Trevisan to include eight species. The first named, Bacteriopsis rasmusseni Trevisan was the Leptothrix I of Rasmussen 1883 (7) from human saliva. It was suggested by Buchanan 1925 that this should be recognized as the type. However, this organism was renamed Bacillus rasmusseni Trevisan 1889 (2 p. 15) and still later Rasmussenia anceps Trevisan 1889 (4 p. 930). The organism perhaps is one that could have been placed in Leptotrichia. The second and third species are acetic bacteria, two of the others are pigmented. The genus Bacteriopsis is not recognized by Trevisan in his later writings. It may well be regarded as a nomen confusum.

Draft Proposal. Bacteriopsis Trevisan 1885 should (should not) be regarded as a nomen confusum and placed in the list of nomina generum rejicienda.

4. Beggiatoa Trevisan 1842 (8 p. 56). The author named and described two species, B. leptomitiformis and B. punctata, and characterized the genus. There would seem to be no question as to the validity of publication of the generic name. Later Trevisan concluded that B. punctata was a synonym of Oscillatoria alba Vaucher (9 p. 198), and renamed it B. alba (Vaucher) Trevisan 1845 (10 p. 58). This generic name has been commonly accepted in bacteriology and is in current use. The type species was designated by Buchanan (11 p. 464) as Beggiatoa alba (Vaucher) Trevisan.

Draft Proposal. Beggiatoa Trevisan 1842 is (is not) con-

served as a generic name in bacteriology with the type species Beggiatoa alba (Vaucher) Trevisan 1845 (Oscillatoria alba Vaucher 1803, Beggiatoa punctata Trevisan 1842).

5. Billetia Trevisan 1889 (2 p. 11). Billet (12 p. 293) in 1888 described an organism from sea water in which there had been macerated some fronds of the sea weed Laminaria. He proposed the name Bacterium laminariae and described the organism in some detail. Filamentous, dissociated, matted, and zoogloeal states were differentiated. No pure cultures were studied. No records have been found in the literature of any subsequent studies of this species. Trevisan in 1889 proposed the generic name Billetia and the species name Billetia laminariae (Billet) Trevisan. The genus was said to be closely related to Kurthia Trevisan 1885 (6), the generic description being "Kurthia sporifera con vagine distinte". Later DeToni and Trevisan (4 p. 931) in 1889 make Billetia a synonym of Kurthia, and renamed the species Kurthia laminariae (Billet) Trevisan. The type species (by monotypy) is Billetia laminariae (Billet) Trevisan 1889 (Bacterium laminariae Billet, Kurthia laminaria Trevisan). The generic name Billetia was validly published (Rule 12 Bact. Code). Its legitimacy may be questioned on the basis of Rule 24 (7) which states that the name of a taxonomic group (taxon) is illegitimate "If the characterization of the group was based upon an impure or mixed culture". Rule 24 (6) may also have pertinence in that the "application is uncertain". It would seem that Billetia Trevisan might be regarded as illegitimate, and a nomen confusum to be placed in the list of nomina rejicienda until such time as the characteristics of Billet's Bacterium laminariae may be more accurately and completely assessed.

Draft Proposal. The generic name Billetia Trevisan should (should not) be placed in the list of rejected generic names (nomina generum rejicienda) until an adequate description of the type species Bacterium laminariae Billet is available and the need for the generic name determined.

6. Bollingera Trevisan 1889 (2 p.26). This generic name was proposed by Trevisan for a single species Bollingera equi Trevisan. This organism was first described by Bollinger (13 p. 583) in 1870 under the name Zoogloea pulmonis equi. Later names proposed were Discomyces equi Rivolta and Micellone 1878 (14 p. 145), Micrococcus ascoformans Johne 1885 (15 p.212), Micrococcus botryogenus Rabe 1886 (16 p.159). The organism was placed in the new genus Botryomyces by Bollinger 1887 (17 p.177) and named Botryomyces equi and Botryococcus ascoformans by Kitt 1888 (18 p. 247). The disease in the horse and other domestic animals is commonly termed botryomycosis. The causal organism was named Staphylococcus ascoformans by Ford 1927 (19 p.424) and Staphylococcus aureus var. equi (Bollinger) Hauduroy et coll. 1937 (20 p. 504).

The generic name Bollingera was apparently validly published. Its legitimacy would be determined by the earlier generic names which are based upon the same type species. The generic name has never come into common use although the organism is currently recognized in treatises on the diseases of domestic animals. The type species (monotypy) is Bollingera equi (Rivolta) Trevisan.

It is necessary to consider whether any of the earlier synonyms of Bollingera have as the nomenclatural type the same species. The genus Discomyces was proposed by Rivolta 1875 (21 p.208) as a substitute name for Actinomyces, and with the type named by him Discomyces bovis. Rivolta and Micellone in 1879 (14 p. 145) named Discomyces equi. This cannot be the type of Discomyces as it was not contained in the genus when first described. Whether or not Botryomyces Bollinger is legitimate is not clear, as the author does not associate the generic name with a specific epithet, saying that the name is tentative, in the statement "Als vorläufige Bezeichnung würde der Vortragende einstweilen, bis die botanische Stellung dieses pathogenen Mikrophyten aufgeklärt ist, im Anschluss an Rabe den Namen 'Botryomyces' (Traubenpilz) vorschlagen." In an earlier part of his paper he notes that he is studying the organism that has been given different

names as Micrococcus botryogenus Rabe, Micrococcus ascoformans Johne and Discomyces equi Rivolta. Botryococcus Kitt 1888 (18 p. 247) is illegitimate as a generic name in bacteriology because it is a later homonym of Botryococcus Kuetzing 1849 (22 p. 89). The type species is usually allocated to the genus Micrococcus or to Staphylococcus.

Draft Proposal. The generic name Bollingera is available for consideration for use as the name of a genus of which Bollingera equi (Rivolta and Micellone) Trevisan is the type.

7. Cenomesia Trevisan 1889 (4 p. 1039). A generic name proposed by Trevisan to include two species of sulfur bacteria. It is noted that morphologically it resembles the algal genus Coelosphaerium Naegeli. The two species included are Cenomesia albida and C. lilacina. Cenomesia is designated as questionably a synonym of Lamprocystis Schroeter by van Niel 1948 (23 p. 838). No other reference to the use of Cenomesia as a generic name in bacteriology has been found. The diagnoses of the genus and of the species are probably too incomplete for their recognition or identification. It is suggested that the names be placed in the category of nomina dubia under the heading of nomina rejicienda.

Draft Proposal. The generic name Cenomesia should (should not) be regarded as a nomen dubium and placed in the list of nomina rejicienda until satisfactory identification can be established.

8. Chlamydatomus Trevisan 1879 (24 p. 137). The single species Chlamydatomus beigelii Trevisan 1879 (Sclerotium beigelianum Hallier 1868 (25 p. 75), Pleurococcus beigelii Küchenmeister and Rabenhorst 1867 (26 p. 49), Zoogloea beigeliana Eberth 1873 (27). The organism is now generally regarded as a fungus and was placed in the genus Trichosporon by Vuillemin 1901. The generic name seems to have been validly published.

Draft Proposal. The attention of the Committee on Medical

Microbiology should be called to the fact that Chlamydatomus Trevisan may have priority over Trichosporon and that consideration should be given to the conservation of Trichosporon against Chlamydatomus.

9. Cornilia Trevisan 1889 (2 p. 21). This genus was differentiated from Bacillus in that Cornilia possessed spores greater in diameter than the spore-containing cells, while the genus Bacillus included rods whose spores were less in diameter than that of the containing cells. Two subgenera were recognized, Eucornilia with twelve species and Pleurospora with two species. The first species described is Cornilia alvei. The Bacillus alvei Flügge 1886 (28 p. 277) should be ascribed to Cheshire and Cheyne 1885 (29 p. 588) rather than to Flügge. Perhaps the best known species is Cornilia pasteuri, the vibrion septique of Pasteur 1887, previously named Vibrio pasteuri Trevisan 1879 (24 p. 149), the Bacillus oedematis maligni Zopf 1885 (30 p. 88).

The generic name seems to have been validly published. No record has been discovered of the designation of a type species. Included in the genus are species which are now usually included in Bacillus or in Clostridium.

Draft Proposal. The genus Cornilia Trevisan 1889 should (should not) be placed in the list of nomina generum rejicienda. Note: Should a type species for Cornilia be designated by an author, the generic name Cornilia would be available providing the genus is based upon a type other than that upon which an older genus is based.

10. Detoniella Trevisan 1889 (4 p. 929). The genus is described as including three species, the first being Detoniella ochracea (Roth) Trevisan. The Conferva ochracea Roth 1797 (31 tab. V, fig. 2) as also the Leptothrix ochracea Kuetzing 1843 (32 p. 198). The type species was designated by Buchanan 1925 (1 p. 289). However, Lieske 1921 (33 p. 2) designated the type species of the genus Leptothrix as L. ochracea. The two genera Detoniella and Leptothrix are based upon the same type species.

In most recent works Detoniella is regarded as a synonym of Leptothrix.

Draft Proposal. Detoniella Trevisan 1889 should (should not) be regarded as a later synonym of Leptothrix Kuetzing 1843, both being based upon the same type species.

11. Dicoccia Trevisan 1889 (2 p. 26). This genus was created for the single species Dicoccia glossophila Trevisan 1889 with reference to the second species of microorganism described by Flügge 1886 (28 p. 258) from mouth secretions in man. It was described as having bipolar protoplasm and with spores unknown. It resembled Pasteurella. The genus and species were again described later in 1889 (4 p. 1034). No further description or recognition of the genus have been found in the literature. The descriptions are so inadequate that the genus may well be rejected as illegitimate because of the inadequacy of the diagnoses.

Draft Proposal. Dicoccia Trevisan 1889 should (should not) together with its species Dicoccia glossophila be regarded as a nomina dubia and placed in the list of nomina rejicienda.

12. Eucornilia Trevisan 1889 (2 p. 21). The subgenus included the first twelve species of the genus Cornilia.

Draft Proposal. Eucornilia Trevisan 1887 should (should not) be placed on the list of nomina rejicienda.

13. Eumantegazzaea Trevisan 1889 (4 p. 942). This author included two subgenera in his characterization of the genus Mantegazzaea. In Eumantegazzaea three species were separated from those of the older subgenus (Rhabdochromatium) in that the cells did not contain the purple pigment of the sulfur bacteria. The subgenus contains the type species Mantegazzaea cienkowskii of the genus. There would seem to be good reason to make this subgeneric name a nomen dubium as is suggested later for the genus Mantegazzaea itself.

Draft Proposal. Eumantegazzaea Trevisan 1889 should

(should not) be regarded as a nomen dubium and placed in the list of nomina generum rejicienda.

14. Eupacinia Trevisan 1889 (2 p. 23). A subgenus of Pacinia proposed by Trevisan to include nine species of Pacina, characterized as "Filamenti normali di Bacillus." None of the species described originally in Pacina are included, the latter are placed in the subgenus Pseudospira. The name Eupacinia was validly published. No type species has been designated. The subgenus as described contains such varied species as the organisms of xerosis, tetanus, and diphtheria. The name Eupacinia has not been used by later authors.

Draft Proposal. Eupacinia Trevisan should (should not) be rejected as a nomen confusum and placed in the list of nomina rejicienda.

15. Euspirillum Trevisan 1889 (2 p. 24). A subgeneric name proposed to include twenty-five species of Spirillum conforming to the description "Spirilli tipici, constantemente con forme a guisa di cavaturaccioli". Among the species included is Spirillum undula (Mueller) Ehrenberg 1830, (34 p. 38) designated by Vuillemin 1913 (35 p. 519) as the type species, and commonly accepted as such. Under the provisions of the bacteriological code, the name of a subgenus which includes the type species of the genus must have the same name as the genus itself. The subgeneric name was apparently validly published. DeToni and Trevisan later in 1889 (4 p. 1009) give the following characterization "Spirilli regulariter spirales, rigidi, abbreviata, spiris uniformibus" with twenty species.

Draft Proposal. Euspirillum Trevisan 1889 is (is not) illegitimate as a subgenus of the genus Spirillum when it is defined to include the type species of the genus, Spirillum undula (Mueller) Ehrenberg and should be placed in the list of nomina rejicienda.

16. Gaffkya Trevisan 1885 (6 p. 105). A genus proposed by Trevisan to include two species, Gaffkya tetragena (Gaffky) Trevisan (Micrococcus tetragenus Gaffky

1883 (36 p. 500) and G. archeri Trevisan. This generic name was validly published and is apparently legitimate if a genus is to be recognized with G. tetragena as the type.

Draft Proposal. Gaffkya Trevisan 1885 should (should not) be conserved and placed in the list of nomina generum conservanda with the type species Gaffkya tetragena (Gaffky) Trevisan 1885 (Micrococcus tetragena Gaffky) 1883.

17. Klebsiella Trevisan 1885 (6 p. 105). One species was named Klebsiella crouposa Trevisan, the Bacterium pneumoniae-crouposae Zopf 1885 (30 p. 66). The change in specific epithet would seem to have been unwarranted, as the name given by Zopf was a binomial. The type species (monotypy) is the pneumobacillus of Friedländer. In 1886 Schroeter (37 p. 152) proposed a new generic name with the species Hyalococcus pneumoniae. Flügge 1886 (28 p. 204) named the organism Bacillus pneumoniae. Trevisan 1889 (2 p. 26) renamed the species Klebsiella friedlaenderi. The generic name Klebsiella was validly published with one species. The specific epithet pneumoniae-crouposae constituted a single epithet and the species name Bacterium pneumoniae-crouposae is a binomial in accordance with Rule 6 (Bacteriological Code). However, the name as generally accepted currently is Klebsiella pneumoniae. Bergey's Manual Ed. 6 1948 (38 p. 458) gives Klebsiella pneumoniae (Schroeter) Trevisan. Apparently strict adherence to the rules would give the species name in the form Klebsiella pneumoniae-crouposae (Zopf). But this correct name has apparently never been used. The ascription of the specific epithet to Schroeter rather than to Zopf may be questioned even though the shortened epithet is now commonly accepted.

Draft Proposal. Klebsiella Trevisan 1885 should (should not) be conserved and placed in the list of nomina generum conservanda with its type species Klebsiella pneumoniae (Zopf. em. Schroeter) Trevisan (Bacterium pneumoniae-crouposae Zopf.

18. Kurthia Trevisan 1885 (6 p. 92). Trevisan proposed this name for a genus with the single species Kurthia zopfii (Bacterium zopfii Kurth 1883 (39 p. 97)). Escherich 1886 (40 p. 2) used the species name Helikobacterium zopfii. Wenner and Rettger 1919 (41 p. 334) apparently without knowledge of the earlier name Kurthia proposed the generic name Zopfius with the species Zopfius zopfii. The generic name Kurthia was validly published and is legitimate with the type species Kurthia zopfii (Kurth) Trevisan. The generic name is currently in use as by Prévot 1948 (42 p. 17) and by Hauduroy et al. 1953 (43 pp. 291-292.)

Draft Proposal. Kurthia Trevisan 1885 should be conserved as a generic name and placed in the list of nomina generum conservanda, with the type species Kurthia zopfii (Kurth) Trevisan 1885.

19. Leptotrichia Trevisan 1879 (24 p. 138). This generic name was proposed to include the single species Leptothrix buccalis Robin 1853 (44 p. 345). There is much confusion relative to the use and usefulness of Leptotrichia as a generic name to include certain mouth bacteria apparently related to the lactic acid rods. Breed and Pederson 1948 (45 p. 364) state "The genus Leptotrichia Trevisan, 1879 is no longer recognized as a valid genus. While the confusion with Leptothrix Kützing, 1843 was corrected by Trevisan's work, the identity of the type species, Leptotrichia buccalis, is uncertain. Few of the species that have been placed in Leptothrix and Leptotrichia are well enough described to be recognized with certainty." However, other students are not in agreement with these statements. Leptotrichia is recognized by Prévot 1948 (42 p. 25) with the type species L. buccalis, basing the acceptance upon the work of Thjøtta, Hartmann and Boe 1939 (46 p. 9) and including the genus in the family Spherophoraceae (Actinomycetales). Wilson and Miles in Topley and Wilson 1946 (47 p. 318) also recognize this genus. Hauduroy et al. 1953 (43 pp. 301-303) accept the genus and include five species. It may be noted that there are given no records of preservation of cultures of any of these species in type culture collections. The situation is

too confused to permit of the formulation of an adequate draft proposal. If Leptotrichia buccalis is one of the lactic acid rods the generic name Lactobacillus becomes a later homonym. If the species is regarded as belonging to the Actinomycetales the name Leptotrichia is certainly entitled to consideration. The names Leptotrichia Trevisan and Leptotrichia buccalis (Robin) were validly published. Their legitimacy may be in question.

20. Leptotrichiella Trevisan 1889 (4 p. 935). This name was proposed as the name of a subgenus of the genus Leptotrichia. One species only is included, Leptotrichia amphibola Trevisan 1889, for an organism previously unnamed from the stomach of the dog (Streptomesobacterio Maggi 1889 (48 p. 381)). An examination of the article by Maggi reveals that there is little more than a name, nothing worthy of the term "description". The description given by Trevisan is derived from the illustration of Maggi. There is no other record of the use of the subgeneric name.

Draft Proposal. Leptotrichiella Trevisan 1889 is (is not) to be rejected as a nomen dubium and placed in the list of nomina rejicienda.

21. Mantegazzaea Trevisan 1879 (24 p. 137). The author states that the new genus contains two species Mantegazzaea cienkowskii and M. articulata (the Bacterium articulatum and B. triloculare of Ehrenberg.) Later in his description of species he includes M. cienkowskii only. This organism was originally described by Cienkowski (49 fig. 48). Still later in the paper he lists two species M. articulata Trevisan and M. cienkowskii. The generic name was probably validly published. Inasmuch as Trevisan in his description of the genus stated "somatia fusiformia vel cylindrica, distincte articulata", Vuillemin (35 p. 521) proposed that Mantegazzaea be made one of his "formogenera conservanda" with Mantegazzaea (Bacillus) hastilis Seitz 1889, one of the fusiform bacilli of medical writers, as the type species. The description of the species is "Sopra carni crude putre-

fatto all'aria". The generic name has never come into use. The name of the genus may well be placed as nomen dubium in the list of rejected names.

Draft Proposal. Mantegazzaea Trevisan 1879 should (should not) be regarded as a nomen dubium and placed in the list of nomina rejicienda.

22. Neisseria Trevisan 1885 (6 p. 105). This generic name was proposed to include the single species Neisseria gonorrhoeae Trevisan, the Micrococcus der Gonorrhoe of Neisser 1879 (50 p. 497). The name was validly published, appears to be legitimate and is in current and common use. The type species (monotypy) is Neisseria gonorrhoeae Trevisan.

Draft Proposal. Neisseria Trevisan 1885 should (should not) be designated as a conserved generic name and placed in the list of nomina generum conservanda with the type species Neisseria gonorrhoeae Trevisan.

23. Nocardia Trevisan 1889 (2 p. 9). A generic name proposed to include five species. The first of these was Nocardia farcinica Trevisan 1889 for the causal organism of bovine farcy described but not named by Nocard 1888 (51 p. 293). The second species was Nocardia actinomyces Trevisan to replace the older name Actinomyces bovis Harz 1877 (52 p. 133). The name was validly published, but its legitimacy has been questioned. Several type species have been proposed or suggested. Vuillemin 1913 (35 p. 526) proposed that the generic name be conserved with the species Nocardia foersteri Trevisan 1889 (Streptothrix foersteri Cohn 1875 (53 p. 186) as the type. Castellani and Chalmers 1919 (54 p. 1040) proposed the type species Nocardia bovis (Harz 1877). Waksman and Henrici 1948 (55 p. 893) designate the type species as Nocardia farcinica Trevisan. All three of the species thus proposed as type species were included in the original publication by Trevisan. The problem of type is so confused that decision should be reached by international agreement. Hauduroy et al. state that there are no cultures of Nocardia (or Actinomyces) foersteri preserved

in type culture collections. The Nocardia bovis is Actinomyces bovis, its acceptance would according to current usage make Nocardia a later synonym of Actinomyces. It is suggested that the approval of Nocardia farcinica as the type would appropriately fix the generic name.

Draft Proposal. Nocardia Trevisan 1889 is (is not) conserved as a generic name and placed in the list of nomina generum conservanda with the type species Nocardia farcinica Trevisan.

24. Octopsis Trevisan 1885 (6 p. 102). Proposed to include five species, Octopsis cholerae-gallinarum of fowl cholera, O. davainei of rabbit septicemia, O. equorum of horse typhoid, O. xanthogenicum of yellow fever and O. lyssae of rabies. The name was proposed somewhat tentatively ("che un momento fui tentato riunire in un genere proprio sotto la denominazione Octopsis). Its legitimacy may be questioned. He lists the synonyms, but does not combine his new generic name with any specific epithet. The name has not been used by later authors, and apparently was abandoned by Trevisan himself, who 1887 (56 p. 94) replaced it with Pasteurella. In 1889 (2 p. 21) he does not even mention it as a synonym. To establish the legitimacy of the generic name Pasteurella which has come into common use, it may be wise to suppress Octopsis.

Draft Proposal. Octopsis Trevisan 1885 should be rejected and placed in the list of nomina generum rejicienda as not validly published because not accepted by the author.

25. Pacinia Trevisan 1885 (57 p. 83). In this genus Trevisan included five species, the first Pacinia cholerae-asiaticae Trevisan. The author lists as a synonym Vibrio cholerae Pacini 1854 (58 p. 40), but a careful search of Pacini's paper fails to reveal this name. This author states that in the liquid dejecta there were to be observed very large numbers of vibriones, and gives a brief description. Trevisan 1889 (2 p. 23) noted Dispora Kern 1882 (59 p. 135) as a synonym. At this time he recognized six-

teen species divided between two subgenera Eupacinia and Pseudospira. The nine species of Eupacinia are described as straight rods, the six of Pseudospira as undulant-flexuous or irregularly pseudospiral. Pacinia cholerae asiaticae is included in the latter subgenus. DeToni and Trevisan 1889 (4 p. 1015) add Microspira Schroeter 1886 (37 p. 168) as a later synonym.

The generic name seems not to have been used by later writers. Many authors have recognized Microspira Schroeter with the same type species as that of Pacinia, apparently not recognizing the clear priority of the latter. Pacinia was validly published and seems to have been the first name given to the genus of which the asiatic cholera organism is the type. However, most authors currently recognize this organism as the type of the genus Vibrio, although there has been no international agreement.

Draft Proposal. Careful consideration should be given to the status of the generic name Vibrio in bacteriology and to the fixing of its type species. Should Vibrio be designated as a nomen generis conservandum with type species Vibrio cholerae-asiaticae (Vibrio comma?), then Pacinia should be considered for designation as a nomen generis rejicienda.

26. Pasteurella Trevisan 1887 (56 p.94). A genus originally including three species, Pasteurella cholerae-gallinarum, P. davainei and P. suilla. Later Trevisan 1889 (2 p.21) recognized twelve species, and renamed the fowl-cholera organism Pasteurella avicida Trevisan (Coccobacillus avicidus Gamaleia 1888 (60 p. 167)). The generic name Pasteurella was validly published. Its legitimacy is challenged by the earlier generic name Octopsis Trevisan 1885 (6 p.102) which included as Octopsis cholerae-gallinarum Trevisan the cause of fowl cholera, and three other species. A draft proposal above suggests that Octopsis Trevisan be listed as a nomen generis rejiciendum. The type species has been given many names in the literature. The nomenclatural type of Trevisan was Pasteurella cholerae-gallinarum. Cultures of the same or related organisms were isolated and described and named from many species of animals and birds. The Winslow Committee 1917 (61 p.561) designated the type species as Pasteurella cholerae gallinarum (Fluegge) Trevisan. The Bergey Manual 1948 (62 p. 546) accepts as the type Pasteurella multocida (Lehmann and Neumann) Rosenbusch and Merchant 1939 (63 p. 85). However, the name Micrococcus gallicidus was proposed by Burrill 1883 (64 p.320) and Pasteurella avicida by Trevisan 1889 (2 p.21) based upon the Coccobacillus avicidus of Gamaleia. Prévot 1948 (42 p.10) and Hauduroy et al 1953 (43 p.366) cite Pasteurella avicida (Gamaleia) Trevisan as the name of the type species. Topley and Wilson 1946 (47 p.767) accept Pasteurella aviseptica. The correct name for the type species cannot readily be determined. A study of this matter may well be requested of the Judicial Commission.

Draft Proposal. Pasteurella Trevisan 1887 should (should not) be conserved and placed in the list of nomina genera conservanda.

27. Perronicitoa Trevisan 1889 (2 p.29). A generic name proposed to include a single species Perroncitoa scarlatinosa Trevisan (Micrococcus scarlatinosus Trevisan 1889 (2 p.29), Streptococcus rubiginosa Edington 1887 (65 p.1265). The genus and species

were again described by DeToni and Trevisan 1889 (4 p. 1053). Apparently the name has not been used by later writers. The generic name was validly published. The species name was applied presumably to the etiologic agent of scarlet fever. Inadequacy of description and lack of use of the name may be sufficient reason to regard it as a nomen dubium and to place it in the list of rejected generic names.

Draft Proposal. Perroncitoa Trevisan should (should not) be regarded as a nomen dubium and placed in the list of nomina generum rejicienda.

28. Pleurospora Trevisan 1889 (2 p.22). This was proposed as a subgeneric name to include two species of the genus Cornilia, C. tremula Trevisan (Bacillus tremulus Koch 1877 (66 p. 417)) and C. sphinx Trevisan (Bacillus sphinx Trevisan 1885 (6 p.100)). The description given is "Sporae macrosomae e latere protuberantes". The name has not been used by subsequent writers.

Draft Proposal. Pleurospora Trevisan 1889 should (should not) be regarded as a nomen dubium and be placed in the list of nomina rejicienda.

29. Pseudospira Trevisan 1889 (2 p.23). This name was proposed for a subgenus of Pacinia Trevisan 1885. It included six species, among them, Pacinia choleraeasiaticae Trevisan 1885. The name of a subgenus which includes the generic type should be the same as that of the genus. DeToni and Trevisan 1889 (4 p.1018) listed eight species of Pacinia in the subgenus Pseudospira. The name has not been used by subsequent authors.

Draft Proposal. Pseudospira Trevisan 1889 should (should not) be regarded as an illegitimate name and placed in the list of nomina rejicienda.

30. Pseudospirillum Trevisan 1889 (2 p.25). A subgenus of Spirillum Ehrenberg 1830 proposed for seven species characterized later by DeToni and Trevisan 1889 (4p.1013) as "Spirilla anomala, contorta, undulata vel irregulariter pseudospirilla (numquam typicas formas Eu-

Spirillorum praebentia). Sporae ignotae." The names of none of the species are in current use. The subgeneric name may be regarded as a nomen dubium.

Draft Proposal. Pseudospirillum Trevisan 1889 should (should not) be regarded as a nomen dubium and placed in the list of nomina rejicienda.

31. Rasmussenia Trevisan 1889 (4 p. 930). A generic name proposed by Trevisan to include bacteria living in the mouth or on the teeth. It included five species, one of them the type species of Leptotrichia, here named Rasmussenia buccalis (Robin and Lebert) Trevisan. The only other reference to the use of Rasmussenia as a generic name found in the literature is that of Clements 1894 (67 p. 28) who recognized Rasmussenia buccalis. The genus is validly published, but seems to be a later synonym of Leptotrichia.

32. Schuetzia Trevisan 1889 (2 p. 29). A generic name proposed to include three species, the first of them Schuetzia poelsii Trevisan for the "Streptococcus der Drüse der Pferde" described by Schütz 1888 (68 p. 172). The other two species are probably not identifiable, S. laughlini for the "Micrococcus of dengue" of McLaughlin 1886 (69 p. 418) and S. dissei the "Diplococcus der Japanischen Syphilis" of Disse 1887 (70 p. 889). The first named organism is renamed Schuetzia equi (Sand and Jensen) Trevisan 1889 (4 p. 1052) on the basis of Streptococcus equi Sand and Jensen (71 p. 437). The generic name Schuetzia is probably best regarded as a later synonym of Streptococcus Rosenbach. If the organism Streptococcus equi Sand and Jensen should be made segregated from Streptococcus, apparently Schuetzia would be available as a generic name.

Draft Proposal. Schuetzia Trevisan 1889 is (is not) a later synonym of Streptococcus Rosenbach. The type species is designated as Schuetzia equi (Sand and Jensen) Trevisan.

33. Winogradskya Trevisan 1889 (2 p. 12). A generic name proposed to include the single species Winograd-

skya ramigera Trevisan. (Zoogloea ramigera Itzigsohn 1867) (72). The genus and species are again described by DeToni and Trevisan 1889 (4 p.1028). The generic name is apparently a later synonym of Zoogloea.

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BACTERIOLOGICAL NOMENCLATURE AND TAXONOMY

STATUS OF NAMES OF BACTERIAL GENERA THAT ARE LATER HOMONYMS OF NAMES OF PROTOZOAN GENERA

Preliminary Statement. File 65.

Editorial Board.

Becker (this BULLETIN 1:103-112. 1951) listed 14 names of bacterial genera which have also been proposed for protozoan genera. Rule 24 of the International Bacteriological Code of Nomenclature states that a bacterial generic name is illegitimate if it is a later homonym of a generic name validly published for a protozoon. On the basis of Becker's analyses, it is proposed that approval be given by the Judicial Commission to the formulation of an Opinion declaring the following names proposed for bacterial genera unavailable in bacteriology and including them in the list of nomina generum rejicienda because of prior use in protozoology.

REJECTED NAMES OF BACTERIAL GENERA

Astasia Meyer 1897 (Flora. Allgemeine Bot. Zeitung. 84:374).

Astasia Pribram 1929 (Jour. Bact. 18:374).

Castellanella Pacheco and Rodrigues 1930 (Arch. Inst. Biologico. São Paulo, Brasil. 11:166).

Charon Holmes 1948 (in Bergey, Man. Det. Bacteriology Ed. 6. p. 1265).

Coccomonas Orla-Jensen 1921 (Jour. Bact. 6:268).

Listerella Pirie 1927. (Pub. S. African Inst. f. Med. Res. 3:164).

Palmula Prévot 1938 (Ann. d. l'Inst. Past. 61:88).

Pfeifferella Buchanan 1918 (Jour. Bact. 3:54).

Phytomonas Bergey et al. 1923 (in Bergey, Man. of Det. Bacteriology Ed. 1,p. 174)

Rhizomonas Orla-Jensen 1909. (Zent. f. Bakt. Par. u. Inf. Abt. 2 22:334).

Rhodosphaera Buchanan 1918 (Jour. Bact. 3:472).

BACTERIOLOGICAL NOMENCLATURE AND TAXONOMY

STATUS OF BABESIA TREVISAN 1889 AS A GENERIC NAME IN BACTERIOLOGY.

Preliminary Statement, File 66.

Editorial Board.

Babesia Trevisan 1889 (1) was proposed as the fourth of Trevisan's genera in his tribe Streptococcee. A description was given for the genus, and two species were named. The name B. xanthopyrethica Trevisan was given to the organism described by Babes (2) from yellow fever in 1883, and by Cornil and Babes (3) in greater detail in 1890. Trevisan gave no description of the organism, but he included what may be regarded as an adequate citation to a description. In a later publication De Toni and Trevisan (4) used the preferable spelling xanthopyretica for the specific epithet, and listed Streptococcus xanthopyreticus Trevisan 1887 (5) as a synonym. The second species name B. erysipeloidis Trevisan was given to the causal organism of erysipeloid in man as described by Rosenbach (6) in 1887. For this species a brief description is given.

The generic name and the names of the two species seem to have been validly published.

On the basis of dedication of the genus to Babes, who described the organism named in Trevisan's first species, the type species was designated as B. xanthopyretica by Buchanan (7). This species was thought by its discoverer to be associated with or to be the cause of yellow fever. Apparently it cannot now be identified, and is not currently recognized.

The second organism, if recognized as the type, would make the commonly accepted generic name Erysipelothrix Rosenbach 1909 (8) a synonym of Babesia. The species Erysipelothrix erysipeloidis (Trevisan) Rosenbach would become a synonym of Babesia erysipeloidis Trevisan.

Furthermore, as shown by Becker (9) the name Babesia Starcovici 1893 (10) was proposed for a protozoan genus with the type species Babesia bovis (Babes) Starcovici 1893. The fact that Babesia Starcovici is a later homonym of Babesia Trevisan does not render it illegitimate under the rules of the zoological code of nomenclature.

In order to obviate the danger of nomenclatural confusion if Babesia Trevisan and Babesia Starcovici are both recognized as legitimate generic names for species of microorganisms causing disease in domestic animals, and to avoid displacing the widely accepted Erysipelothrix as a generic name in bacteriology, it is proposed that the Judicial Commission issue an Opinion rejecting the generic name Babesia Trevisan 1889 and authorize its inclusion in the list of nomina generum rejiciendum.

DRAFT OPINION. The generic name Babesia Trevisan 1889 should be rejected and placed in the list of nomina generum rejicienda.

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STATUS OF INOPS CONSILII, FESTINA LENTE, AEGRESCIT MEDENDO, VULNUS IMMEDICABILE AND ARCANA CAELESTIA AS NAMES OF SPECIES OF PLANT VIRUSES.

Preliminary Statement.

Editorial Board.

The Judicial Commission has been requested to issue an Opinion as to the legitimacy and validity of certain names suggested by Thomas and his co-workers (1, 2, 3, 4, 5, 6)as names of genera and species of plant viruses.

The names suggested were in most cases somewhat unconventional. Correspondence with Dr. Thomas elicited two facts. He himself assumed responsibility for the names, and he further stated "my binomials are not intended as usable names for the corresponding viruses but rather to indicate the absurdity of attempting to designate these nebulous entities in any lasting way at this time." It is evident that the names are not accepted by the author, and were not intended to be serious proposals. Rule 12 of the Bacteriological Code states:-

"A name of a taxonomic group is valid only if it has been definitely accepted by the author who published it."

The names would appear not to have been validly published, and hence are "without standing in nomenclature."

DRAFT PROPOSAL. The following names of genera and species of viruses published by Thomas,i.e., Inops, (I. consilii), Festina, (F. lente), Aegrescit (A. medendo), Vulnus (V. immedicabile) and Arcana (A. caelestia) definitely were not accepted by the author, are therefore not validly published, and are without standing in nomenclature.

The following notes give citations and etymology.

Inops consilii Thomas, Scott, Wilson and Freitag 1944

(1). The authors state: "The disease initially referred to as the Winters peach mosaic and here designated as yellow bud mosaic (Inops consilii) has been found in eleven additional orchards." The name is more definitely proposed by Thomas and Rawlins (2) in an article on yellow bud mosaic in a paragraph which reads:- "Name of the Causal Virus. Inops consilii Thomas, Scott, Wilson and Freitag." The generic name is the Latin adjective inops meaning "weak, destitute" or "needy". The specific epithet is the genitive of the Latin noun consilium meaning "deliberation" or "counsel."

Festina lente Thomas and Rawlins 1951 (3). This is suggested by Thomas and Rawlins in an article on cherry rugose mosaic:-"Name of the Causal Virus. Festina lente Thomas." The generic name is apparently the feminine form of the Latin adjective festinus meaning "quick", or if used substantively possibly, "that which is quick." The specific epithet is an adverb, lente, meaning "slowly" and is not an adjective or noun as prescribed by the rules.

Aegrescit medendo Thomas and Rawlins 1951 (4). The name is suggested in an article on "Plum White Spot" in the statement "Name of the Causal Virus. Aegrescit medendo Thomas and Rawlins." The generic name is from the Latin verb aegresco and means "It (or he) becomes ill (or sicker)." It is neither a noun or an adjectival substantive. The specific epithet medendo is apparently the ablative of the gerundive of the verb "medior," meaning "by being healed."

Vulnus immedicabile Thomas and Rawlins 1951 (5). Proposed in an article on "Standard Prune Constricting Mosaic" in the statement "Name of the Causal Virus. Vulnus immedicabile Thomas and Rawlins." Vulnus is a neuter Latin noun with the meaning "wound," the specific epithet is the Latin adjective immedicabile, with the meaning "incurable".

Arcana caelestia Thomas and Rawlins 1951 (6). Proposed in an article on "Almond Calico" in the statement "Name of the Causal Virus. Arcana caelestia Thomas

and Rawlins." The generic name is the plural of the Latin neuter noun arcanum with the meaning "a secret, a mystery." The specific epithet is the neuter plural of the Latin adjective caelestis, perhaps used as a substantive, with the meaning "heavenly object, divine thing."

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(5) Thomas, H. Earl and T. E. Rawlins. Standard Prune Constricting Mosaic. do. 10:185-186. 1951.
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BACTERIOLOGICAL NOMENCLATURE AND TAXONOMY

NOMENCLATURAL COMMENTS

CONSERVATION OF GALLIONELLA. The following statement from Dr. R. Ross, chairman of the Special Committee for Bacillariophyta, refers to the action of his subcommittee and gives some observations relative to the possible conservation of Gallionella as a generic name in Bacteriology. (See This BULLETIN 2:96-103. 1952).

"Melosira. It was the desire of my committee to conserve this spelling of the name both against the earlier spelling Meloseira and against the still earlier synonyms Lysigonium and Gaillonella. On taking expert advice on how to do this, I was told that it was necessary to adopt the view, which may perhaps best be described as a legal fiction, that when Kützing deliberately altered the spelling of this name from Meloseira to Melosira he published a new and separate generic name, which, although illegitimate as a nomen superfluum, could be conserved against Meloseira, Lysigonium and Gaillonella.

Lysigonium. If Melosira moniliformis (O. F. Müll.) Kütz. comes to be regarded as belonging to a different genus from Melosira nummuloides (C. Ag.) Kütz., that genus will have to be called Lysigonium Link (unless there is an earlier homonym or synonym that I have overlooked or unless conservation action is taken, for which I see no need).

Gaillonella. This, being founded on the same type species as the earlier Lysigonium, could only be used as a generic name if conserved against Lysigonium or in a sense excluding its type.

Gallionella. It is clear from Ehrenberg, Die Infus., p. 166 (1838), that this is an altered spelling of Gaillonella Bory, for which it is an avowed substitute. It must therefore be typified by the same species. Like Gaillonella it is a superfluous later synonym of Lysigonium and can only be used if it is conserved against that name or if it is conserved in a sense which excludes

its original type. Since it was published later than Melosira Kütz., it was unnecessary to include it as a nomen rejiciendum vis-a-vis that name.

Diatoma. It was the desire of my committee to provide by conservation for the continued use of this name in its current sense. Diatoma Loureiro is a flowering plant and sunk in synonymy. Diatoma DC. originally contained a species of Achnanthes and one of Tabellaria, but none of Diatoma as at present understood. As time went on, other species were placed in the genus including some which fall within the modern concept of Diatoma; the first of these was D. vulgare Bory. It was not until 1862, however, that a description of Diatoma excluding both DeCandolle's original species was given. In order to conserve the genus in its current sense, this description (Grunow, 1862) must be regarded as the publication of a new genus, a later homonym of Diatoma DC., as well as of Diatoma Lour. Of the species included in it by Grunow, D. vulgare Bory has been designated as the lectotype by Boyer (1927). Since Diatoma DC., although illegitimate as a later homonym and also now listed as a nomen rejiciendum, was validly published before 1828, the specific epithet of Diatoma vulgare Bory is legitimate (see Internat. Code, 1952 ed., Art. 73). There can be no question of adding another authority unless the species is transferred to a genus with a different name.

I can myself see no objection to conserving Gallionella in the sense of a genus typified by G. ferruginea Ehrenb. Even if Melosira were split, the name would not be required for the segregate genus containing M. moniliformis (O. F. Müll.) Kütz., for the earlier Lysigonium is available. In order to carry out this conservation you would have to proceed in the same way as we had to in the case of Diatoma and treat the first publication of a description of Gaillonella which excluded G. moniliformis and included G. ferruginea as the publication of a new genus separate from Gallionella Ehrenb, 1838. This new genus would have to be conserved against the earlier homonym Gal-

lionella Ehrenb., 1838, and also against any earlier synonyms there may be. If there is no earlier valid specific epithet for its type species, this would still be Gallionella ferruginea Ehrenb.

In conclusion I note one query of yours with which I have omitted to deal. The use of Lysigonium, Gaillonella or Gallionella as the names of subgenera within Melosira has no relevance to their simultaneous use as independent generic names. There is nothing in the rules to prevent a genus having the same name as the subdivisional epithet of a subgenus or other subdivision of a genus. Although Rec. 32A deprecates creating such names, it has not the force of a prohibition and does not make such names illegitimate."

RAPPORT D'INTRODUCTION DU PRESIDENT DU SOUS-COMITÉ Clostridium POUR L'UNIFICATION DE LA NOMENCLATURE DES TYPES TOXINOGÈNES DE C. botulinum.

A. R. Prévot, Paris.

Préambule . La raison qui a motivé la constitution de ce Sous-Comité est la divergence de nomenclature entre les types C et D de C. botulinum. Voice les faits : en 1941, le Pr. Willems identifie une souche belge de C. botulinum isolée du foie d'un cheval mort de botulisme, grâce à un anti-sérum D de l'Institut allemand Behrings Werke . En 1948, nous-meme avec Brygoo identifiâmes une souche francaise isolée dans les mêmes conditions, grace au sé-rum anti-D préparé avec la souche D de Willems . Plus tard, après échange de souches et d'antitoxines avec les spécialistes sud-africains et nord-américains du botulisme, nous constatons que les souches D française et belge sont identiques aux souches C africaines et américaines . Pen-dant 3 ans, nous avons étudié l'origine de cette divergence par la recherche des souches historiques . Mais toutes les souches historiques ont perdu leur pouvoir toxinogène . Par contre, les antitoxines historiques confirment que le C african-américain est le D franco-belge . Il y a donc lieu de procéder à une unification de nomenclature basée non plus sur la priorité historique mais sur la logique . Ce problème rejoint par ailleurs un autre problème de nomen-clature et il serait possible de le règler en même temps que celui de la confusion entre C et D .

Historique . On a utilise dans le passé l'expression C. parabotulinum avec des définitions différentes . Tout d'abord, l'expression parabotulinum a eu entre les mains de Seddon d'une part et de Theiler d'autre part une définitionpathogénique : syndrome parallèle au botulisme . Par la suite, C. parabotulinum devient entre les mains de K. Meyer et J. B. Gunnisson une variété biochimique . Comme Seddon et Theiler ont abandonné l'expression de parabotulinum puisque les syndromes provoqués par

ces germs étaient réelement du botulisme, la logique demande à ce qu'on abandonne aussi C. parabotulinum comme désinence de variété biochimique puisque C. parabotulinum A et B déclanche le botulisme authentique .

Projet de nomenclature . On pourrait donc déjà proposer ce qui est admis par de nombreux bactériologistes :

C. parabotulinum bovis Seddon = C. botulinum C .

C. parabotulinum Theiler = C. botulinum D .

C. parabotulinum A Meyer et Gunnisson = C. botulinum A var. ovolyticus .

C. parabotulinum B = C. botulinum B var. ovolyticus ;

car ce qui doit compter avant tout dans une nomenclature logique et utilitaire est la nature immunochimique de la toxine et la contrepartie : celle de son antitoxine .

Reste le problème C, D .

Mason et Robinson avaient déjà reconnu l'absence totale de communauté antigénique entre les types A et B, et l'existence d'une communauté antigénique entre les types C et D . Avec Brygoo, nous avons repris le problème avec une technique différente : emploi de sérums de titres élevés préparés avec une seule souche, dose-tests comportant un nombre plus élevé de DMm . Les 2 faits de Mason et Robinson sont confirmés : A et B sont des types autonomes sans communauté antigénique . C et D ont une communauté antigénique . Ceci peut expliquer l'origine de la divergence de nomenclature Europe contre Afrique-Amérique, car la toxine de Willems, assez faible, a pu être neutralisée par l'antitoxine D allemande, sans qu'elle soit D, mais au contraire C . Dès lors, les types C et D ne sont que des types immunochimiques de l'espèce C . Par ailleurs Gunnisson a mis en évidence 2 sous-types dans C : Cα et Cβ .

La nouvelle nomenclature de C. botulinum deviendrait donc:

I. Genre : Clostridium.

Définition de Prazmowsky
Sous-genre VI C. botulinum
groupe tous les germes provoquant le botulisme .

1. Espèce-type C. botulinum A
définie par ses caractères culturaux et biochimiques et par la toxine A et son antitoxine .

Variétés biochimiques : C. botulinum A var. ovolyticus (syn. C. parabotulinum A) et C. botulinum A var. non ovolyticus (syn. C. botulinum A).

2. Sous-espèce : C. botulinum B .
définie par ses caractères culturaux et biochimiques et par la toxine B et son antitoxine.

Variétés biochimiques : C. botulinum B var. ovolyticus (syn. C. parabotulinum B) et C. botulinum B var. non ovolyticus .

3. Espèce C. botulinum C
définie par ses caractères culturaux et biochimiques, la toxine C et son antitoxine (dont les souches déposées sont les souches sud-africaines et la souche francaise 468 ex-D).
Deux sous-types toxinogènes : Cα et Cβ .

4. Sous-espèce : C. botulinum D
définie par ses caractères culturaux et biochimiques et par la toxine D et son antitoxine présentant une communauté antigénique avec C .

5. Espèce C. botulinum E
définie par ses caractères culturaux et biochimiques, la toxine E et son antitoxine .

Conclusion . Il est donc nécessaire que chaque Institut s'occupant de botulisme ait à sa disposition un échantillon de chacune des 5 antitoxines, de titre élevé, préparée avec une seule souche, telles que les prépare actuellement l'In-

-stitut Pasteur de Paris . Chaque antitoxine déposée con--stitue la référence étalon pour la typie des espèces botuli--ques .

INTERIM REPORT OF THE SUBCOMMITTEE ON THE FAMILY NEISSERIACEAE

An Abstract.
E.G.D. Murray, Chairman

This report presents a summary of the work accomplished during the last three years by the Subcommittee, and outlines future plans.

Members have been responsible for the revision of the section on Neisseriaceae in the forthcoming Sixth Edition of Bergey's Manual. A study of the French Type C of the menigococcus has been made and its serological relationships are being presented in a separate report. Observations have been made on the epidemiology of the serological groups of the meningococcus, and the occurrence of other Neisseriae in animals other than man. A study of the genus Veillonella is under way.

Several members of the group have published studies on the metabolism of some of the members of this family. Plans for future work are outlined.

MEMORANDUM ON THE NOMENCLATURE OF THE PNEUMOCOCCUS GROUP

by
F. Kauffmann and E. Lund
Statens Seruminstitut, Copenhagen. (Chief: J. Ørskov, M. D.)

Today we have two different systems of nomenclature for the designation of serological types or serotypes of pneumococci: The first nomenclature was published in 1940 by Kauffmann, Mørch and Schmith, following Cooper's original nomenclature which was retained, but expanded. New types serologically related to one of Cooper's types were gathered into one group; for example group 7 consists of types 7, 7A, 7B and 7C which have one or more antigens in common. This grouping of related types was undertaken for practical reasons in order to simplify diagnosis and therapy.

In 1941 Walter and co-workers in New York described several new types and accepted the classification of Kauffmann, Mørch and Schmith.

The second nomenclature was published in 1944 by Eddy. She rejected the classification of Kauffmann, Mørch and Schmith and gave the various types consecutive numbers, regardless of the antigenic structure.

Against the proposal of Eddy the following facts may be advanced:

1) According to the International Rules of Nomenclature, it is not permissable arbitrarily to alter already published names of bacterial types, for example to call Kauffmann, Mørch and Schmith's Type 7C type "50". For reasons of priority (1940 against 1944), the first name, "7C", must be retained.

2) Apart from these formal but binding reasons, from a scientific point of view it is preferable when dealing with a type closely related to Cooper's type 7 to name it "Type 7C", rather than give it a new number.

3) In the preparation of diagnostic and therapeutic immune sera it is advisable to gather the related types into group

sera. Then, according to circumstances, it will be possible to make either a group diagnosis or an exact type diagnosis.

The fact that there is a practical demand for such a grouping is also clear from the fact that Eddy herself puts several types into groups. That being so, why not undertake this grouping according to Kauffmann, Mørch and Schmith's antigenic schema, which shows the natural relationships of the various types?

4) Experience extending over several years proved the suitability of the Danish nomenclature. The division into groups is not artificial but corresponds to the natural conditions. Whereas some types like 1 and 2, show a pronounced serological specificity, others, such as the types in Group 7 have strongly developed common capsular antigens and thus form a natural group.

Another argument in support of subdividing the pneumococci into groups of serologically related types is to be found in the fact that there are antigens common to certain groups of pneumococci and other kinds of bacteria.

For example, Kauffmann and Langvad-Nielsen demonstrated antigens common to one type of Salmonella (S. kirkee) and all the types in pneumococcus group 35. Similarly, Mørch found antigens common to two strains of non-haemolytic streptococci and the pneumococcus groups 19 and 24. Furthermore, Mørch and Knipschildt demonstrated antigens common to a coli strain and pneumococcus group 9.

5) The State Serum Institute, Copenhagen, is today the only institute manufacturing and distributing all diagnostic pneumococcus sera. Since January 1, 1942 the Danish sera have been supplied to institutes in most of the countries of Europe. These pneumococcus sera are designated by the Danish nomenclature, which is therefore followed in these countries and the results obtained with these sera are reported in the literature. Strains of all types of pneumococci are also supplied to many institutions.

It will therefore cause a great deal of confusion if this no-

menclature, generally employed as it is in Europe, were now to be altered.

For these reasons we decline to alter the nomenclature we published in 1940, which maintains Cooper's nomenclature and which in principle has been accepted by Walter and co-workers.

We therefore suggest that Kauffmann, Mørch and Schmith's nomenclature should receive International recognition.

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CONCERNING THE CONTROVERSY OVER CONSERVATION OF THE GENERIC NAME BACTERIUM AND THE FAMILY NAME BACTERIACEAE.

by F. Kauffmann, M. D.
From Statens Seruminstitut, Copenhagen (Chief:
J. Orskov, M. D.)

In order to correct any misconception that the current controversy (1, 2) concerning Opinion No. 4 of the Judicial Commission (3) is a matter of importance only to the one bacteriologist who has publicly expressed views dissenting from the opinion, I wish to place myself on record as supporting him without reservation in a request that the opinion be rejected. From my extensive contacts in the field of enteric bacteriology, I know that the views of a large number of American bacteriologists coincide with those expressed by Borman (1) who may be regarded as their unofficial but nevertheless authentic spokesman in this matter. Moreover, I wish to make it plain that dissatisfaction with Opinion No. 4 is not confined to American bacteriologists alone. As a member of the International Committee on Bacteriological Nomenclature, and as cochairman of its Enterobacteriaceae Subcommittee, I have requested a review of Opinion No. 4 by the entire Committee.

The views of the Enterobacteriaceae Subcommittee of the British Advisory Nomenclature Committee expressed by Taylor (2) should not be confused with those of the overwhelming majority of the Enterobacteriaceae Subcommittee of the International Committee on Bacteriological Nomenclature. The two views are diametrically opposed. The International Subcommittee has voted 9 to 4 against conservation of the generic name Bacterium and 10 to 3 against conservation of the family name Bacteriaceae.

In presenting the views of the British subcommittee, Taylor (2) has drawn a parallel between the two actions conserving the generic names Bacillus and Bacterium respectively. In my opinion, the first action conserving the generic name Bacillus was wrong. Consequently, I see no

merit in complicating bacteriological nomenclature still further by conserving another name even more extensively "vulgarized" than the first by the manner in which it has been used and will continue to be used as a general, all-inclusive, lay name.

In summary: I am opposed to conservation of the generic name Bacterium and the family name Bacteriaceae; my reasons are essentially the same as those presented by Borman (1); I cannot agree with the reply of the British subcommittee (2), I point out that action by the International Committee validating Opinion No. 4 would be contrary to the wishes of one of its subcommittees which has already voted against conservation of the names involved.

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BACTERIOLOGICAL NOMENCLATURE AND TAXONOMY

THE STATUS OF THE GENERIC NAMES MICROCOCCUS AND STAPHYLOCOCCUS AND OF THE SPECIES NAME STAPHYLOCOCCUS AUREUS

Request for an Opinion. File No. 23.

T. Gibson
School of Agriculture, Edinburgh.

Since the end of last century the Gram-positive catalase-forming cocci that do not form cell groups of regular form have usually been allotted either to Micrococcus Cohn or to Staphylococcus Rosenbach. In 1885 Zopf (9, p. 51) regarded these genera as inseparable, and later investigators have consistently failed to find a criterion by which the organisms could be divided into two groups each deserving generic status. Despite the virtual unanimity that has been reached in taxonomy both generic names continue to be used for the same species. This unfortunate situation appears to derive in part from custom and in part from the difficulties in applying the Bacteriological Code of Nomenclature to cases in which the identity of the original nomenclatural type is uncertain. In view of the urgency of the question the Judicial Commission is requested to issue an Opinion on the status of Micrococcus and Staphylococcus. In the following statement an attempt is made to indicate the more relevant aspects of the case.

Micrococcus

This name was proposed in 1872 by Cohn (3, p. 15) for bacteria with spherical or oval, non-motile cells which occur in pairs, short chains or clumps. No type species was designated, and it is therefore pertinent to consider the species that were included. Prominence was given by Cohn to the pigment-forming organisms that he and his collaborator Schroeter (6) obtained on slices of cooked potato and other media kept in a moist atmosphere under bell jars. The first six species in Cohn's list were secured in that way. The sequence in which they are given is: Micrococcus prodigiosus, M. luteus, M. aurantiacus, M. chlorinus, M. cyaneus and M. violaceus. Both authors

devote much more attention to M. prodigiosus than to the other species. Among the few diagnostic characters mentioned are the colours and the solubilities of the pigments formed. This information indicates that several of the organisms would now be regarded as rod forms, probably as motile rods. Cohn states that all have the same morphology.

Fourteen years later Schroeter (7) produced a classification of twenty-eight species of Micrococcus in which the premier position is again accorded to M. prodigiosus. This contribution and also Zopf's book (9), published a year earlier, although they include rod forms in Micrococcus, do also incorporate an indisputably genuine coccus which can be recognized today, the Micrococcus aureus (Rosenbach) Zopf.

It is evident that Cohn's Micrococcus comprises a group quite different from that to which the name is now applied. With the later restriction of the genus to coccal bacteria problems have arisen concerning its type species. Buchanan (2, p. 613) proposed Micrococcus luteus as the type. The draft revision of Rule 9 of the Code of Nomenclature (see this BULLETIN 1, (3), 129-130) when applied to this case requires that Buchanan's choice of type species must be accepted unless it can be proved that his choice is not in accordance with the rules. Conformity to the rules necessitates that M. luteus is identifiable; that is a question needing clarification.

Cohn was unable to secure and maintain pure cultures - a fact which he himself recognized and deplored (3, p. 129) - and his description of M. luteus includes only two definite characters: (1) the production of an insoluble yellow pigment and (2) the ability to produce a thick, folded, yellow pellicle and a yellow deposit in a solution containing ammonium tartrate as the only source of carbon and nitrogen. Schroeter (7), after gelatin had been introduced into bacteriological work, recorded the type of colony and the absence of liquefaction on that medium. It may be noteworthy that Schroeter in both of his publications (6, p. 119; 7, p. 144) states that the organism is elliptical in shape. The possibility cannot

therefore be excluded that M. luteus Cohn was but another of the rod forms that were originally allotted to Micrococcus. Later workers have questioned the adequacy of the descriptions of M. luteus provided by Cohn and Schroeter. In 1896 Lehmann and Neumann (4), who have frequently been credited with the first useful treatment of the genus Micrococcus, decided (p. 161) that M. luteus Cohn could not be identified. They proceeded to define the species afresh.

Breed (1) rejects M. luteus Lehmann and Neumann on the grounds that it differs from the M. luteus described in Schroeter's second paper (7) in liquefying gelatin. In an addendum to his paper Breed proposes that a culture (ATCC no. 398) identified as M. luteus by Hucker should be selected as the type culture for the type species of the genus Micrococcus. Apparently under the rules this proposal must also be rejected because ATCC no. 398 does not possess one of the few known characters of M. luteus Cohn, the ability to grow in a tartrate -NH_3 - salts solution.

It may not be easy to find a micrococcus that conforms to Cohn's original description in producing a yellow growth and also in developing profusely in an ammonium tartrate solution. Attempts have been made in the writer's laboratory to isolate one from air and other sources; bacteria which form yellow colonies on tartrate -NH_3 agar have often been obtained, but so far in every instance they have been rods, most frequently short diphtheroid (coryneform) rods.

In summary, it would appear that prior to the year 1885 Micrococcus was not a legitimate generic name for organisms now recognized as cocci. Not until that date, in the publication of Zopf (9), was a definite coccus placed in the genus. Zopf transferred that species from Staphylococcus.

Staphylococcus

As a generic name Staphylococcus was introduced in 1884 by Rosenbach (5) when he described S. aureus and S. albus. Buchanan (2, p. 612) designated Staphylococ-

cus aureus as the type species. In Rosenbach's publication that species was on page 19 named Staphylococcus pyogenes aureus, but later (p. 27) the acceptable binomial Staphylococcus aureus was introduced. The validity of the latter name can scarecely be questioned. Noteworthy is that no subsequent author appears to have doubted the identity of the original cultures of S. aureus, and also that this name was proposed at a date when the genus Micrococcus was still in essentially the same state as that in which it had been left in 1872 by Cohn.

Shaw, Stitt and Cowan (8) have proposed as the type culture of Staphylococcus aureus the widely known strain FDA 209-P (ATCC 7538 P, NCTC 7447).

DRAFT PROPOSALS

The Judicial Commission is asked to prepare and issue an Opinion on the status of the generic names Micrococcus and Staphylococcus. The following draft proposals are suggested:

1. Staphylococcus Rosenbach is (is not) recognized as a nomen genericum conservandum.

2. Staphylococcus aureus Rosenbach is (is not) recognized as the type species of the genus Staphylococcus Rosenbach.

3. The culture FDA 209-P is (is not) recognized as the type culture of the species Staphylococcus aureus Rosenbach.

4. In the year 1884 Micrococcus was an illegitimate (a legitimate) generic name in bacteriology.

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CONSERVATION OF THE GENERIC NAME BORRELINA AND DESIGNATION OF THE TYPE SPECIES

Request for an Opinion. File No. 53.

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In 1953, Bergold proposed the name Bollea to replace the name Borrelina Paillot for that genus of rod-shaped insect viruses occurring in polyhedral inclusions. Bergold considered the description on which the name Borrelina bombycis Paillot 1926 was based to be inadequate and states that since this, in his opinion, is true, "there was no justification for Holmes to choose Borrelina violating the rule of priority. Therefore, in order to overcome the general confusion, the name Borrelina is rejected and an entirely new name now proposed." In so doing, Bergold has retained the type specific epithet, bombycis, though rejecting the generic name, Borrelina. It is not clear whether this action by Bergold is justified or in accord with generally accepted taxonomic procedures.

A number of names have been applied to the causative agent of silkworm polyhedrosis in the past. Most of the authors applying such names, however, did so under the impression that they were naming some type of microorganism other than a virus. Thus we find in the literature such names as Micrococcus lardaris Krassilstschik 1896, Microsporidium polyedricum Bolle 1894, Entomococcus bombycinus del Guercio 1929, and others similarly inappropriate to a virus. Paillot, alone, applied a name to this entity with the full realization that he was dealing with a virus. It is true that Paillot's description could be considered inadequate, as judged by present knowledge of these viruses, but there is no question as to the identity of the virus to which his name was applied.

When Holmes sought to classify the viruses he accepted and used the name proposed by Paillot (changing the spelling of the generic name from Borrellina to Borrelina to correct what he interpreted as an error in spelling). Holmes'

description was no more adequate than that of Paillot.

Recognizing what he later (Steinhaus, 1953) termed "certain errors, weaknesses, and inadequacies in the Holmes treatment of the insect viruses," Steinhaus (1949) published a revision of the insect virus portion of Holmes' work. In it, the genus Borrelina Paillot, and the species B. bombycis Paillot were retained. Genus and species were characterized much more fully than had been done previously. With this work, the nomenclature would seem to be firmly fixed in the literature for Paillot had first named the virus, Holmes had incorporated it in his very inclusive systematic scheme, and Steinhaus had associated an adequate description with the name.

The whole subject was reopened, however, when Bergold's 1953 paper appeared, seemingly contributing to the confusion by proposing a new name, Bollea, to replace Borrelina. Bergold's objections to the name Borrelina seem to be the following:

1). "The fact that the original description of the genus Borrelina given by Paillot (1926) was such that it could be applied to the agents of three different diseases, invalidates the description for any one of them." (Bergold 1953, p. 496). Paillot placed in the genus Borrelina the agent of silkworm polyhedrosis (B. bombycis) and two other viruses which Steinhaus later removed and placed in two new genera. Rather than there being anything unusual in this, it appears to the writer that such a procedure is of common occurrence and is accepted practice in the systematic revision of any group of organisms.

2). "...the description of Borrelina bombycis is not adequate." (Bergold 1953, p. 496). Perhaps it is quite true that, from the standpoint of modern knowledge, Paillot's description was inadequate, but it seems questionable how much unanimity might be found among present-day virologists as to what constitutes an "adequate" description of a virus. It might be noted that in some fields of systematics nothing more than a published photograph of the organism with name associated is considered an adequate description

if it identifies the organism sufficiently. This objection of Bergold's appears to be answered by the fact that Steinhaus linked the name to a more complete description. It is doubtful if Bergold would question the adequacy of Steinhaus' description inasmuch as the latter composed his description almost entirely from data published by Bergold. The fact that Bergold rejects the generic name Borrelina but accepts its specific epithet bombycis would seem to indicate that Bergold does not find previous descriptions entirely inadequate.

3). Bergold does not consider Paillot's work acceptable since he does not believe that Paillot "saw" the virus. This belief may be valid but it is one in which not all other workers share. The writer's investigations on insect viruses (e.g. Hughes 1950) have led him to the belief that it is quite probable that Paillot did see the silkworm virus. This question, however, is one that can never be resolved beyond doubt and one that seems to be of questionable importance. The important points appear to be that Paillot, having determined that he was working with a filterable virus, applied a name to that virus, and that his description was adequate enough to insure that the identity of the virus has not been lost or confused.

4). "...there was no justification for Holmes to choose Borrelina violating the rule of priority." (Bergold 1953, p.497). At least five names were proposed for the agent of the silkworm disease prior to the time that Paillot proposed his. As pointed out earlier, the authors of these names believed that they were naming a microorganism of some kind other than a virus. Thus the names are all such as to be rather inappropriate for a virus. Bergold does not propose that Borrelina be rejected in favor of one of the previously-proposed names, but, rather, appears to the writer to be himself violating the rule of priority in proposing an entirely new one.

Bergold justifies his naming of the genus for Bolle by citing that worker's contributions to present knowledge of the silkworm virus. The writer does not intend to deprecate the work of Bolle. Whether or not he made a greater contribu-

tion than Paillot is beside the point. The important facts are that both men proposed names for the agent of silkworm polyhedrosis. Bolle, believing that he was working with a protozoan, proposed the name Microsporidium polyedricum. Paillot, recognizing the agent to be a virus, proposed the name Borrellina bombycis. Bolle's name, though preceding Paillot's, hardly seems applicable to a virus. Bergold does not suggest using the name proposed by Bolle, but creates a new one honoring Bolle.

Unless there are specific rules which would invalidate the name Borrelina it would appear that substitution of the name Bollea would be in violation of Principle 9 of the Code. Furthermore, Principle 1 which deals with fixity of names and the "avoidance of all useless creation of names" would seem to be applicable.

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NOMENCLATURAL AND TAXONOMIC REVIEWS.

HAUDUROY, Paul (Lausanne), EHRINGER, GUILLOT, G. (Paris), MAGROU (Paris), PRÉVOT, A.R. (Paris), ROSSET (Lausanne), and URBAIN (Paris). Dictionnaire des Bactéries Pathogènes pour l'Homme, les Animaux et les Plantes suivi de la Liste des Êtres Microscopiques conservés dans les Collections de Cultures Types. pp. 692 + 64 Masson et Cie. Paris. 1953. This is a completely revised and enlarged edition of a similar dictionary published in 1937. The volume is a valuable aid to any one who is concerned with the nomenclature and the taxonomy of the bacteria that are pathogenic for plants and animals. It is not only a dictionary of names, but includes as well descriptions of species. The arrangement of material is easily understood, and desired information may be found readily. The following points require some emphasis.

1. There is an alphabetic listing of the specific epithets in specific names of bacteria that are pathogenic for man, animals and plants. Each epithet is followed by the name of the genus in which it has been used and this in turn by the accepted species name. For example, the specific epithet abortus is listed three times, with three genera, each referring to Brucella abortus, the name accepted by the authors.

2. Most of the names listed are those that have been recognized in three recent taxonomic compilations, namely, Bergey's Manual of Determinative Bacteriology Ed. 6, 1948, Topley and Wilson's Principles of Bacteriology and Immunity Ed. 3, 1946, and Prévot's Manuel de Classification et de Détermination des Bactéries Anaérobes 1948.

3. The names of all taxa from genus to order are arranged alphabetically, and the diagnosis of each taxon is given as formulated in each of the manuals cited above. For each genus there is indicated the type species.

4. Under each accepted generic name there are listed alphabetically (by specific epithets) the species names of the pathogenic bacteria, but not those of the Rickettsiae and

the viruses. The name accepted is in most cases that used by Prévot. For each recognized species there is given a list of synonyms and a brief characterization of morphology, culture, biochemistry and biology, and for each a valuable notation indicating whether or not the organism may be secured from some one or other of the type culture collections in the world.

5. Under the alphabetic heading "Classification" are given the several classifications of the bacteria from genus to division as outlined by Prévot, by Breed, Murray and Parker-Hitchens, and by Wilson and Miles.

6. A large number of new combinations (about 160) are given for specific names. Presumably they are to be ascribed to the group of authors as a whole, and probably will perforce appear in the literature as attributable to "Hauduroy et al."

7. Names (nomina nova) are given to 25 species of bacteria previously described in the literature but not named by the author.

8. Some of the genera are described in considerable detail, particularly those in which biochemical characters and serology are used in differentiation of species and serotypes, particularly the species included in Eberthella, the Enterobacteriaceae, Mycobacterium, Escherichia, Salmonella and Shigella.

9. Apparently some indefiniteness in ascription of authorship in the several sections of the sixth edition of Bergey's Manual has led to faulty author citation in the Dictionnaire. For example the name of fourteen species of Streptomyces are incorrectly ascribed to "Bergey et al." rather than to Waksman and Henrici.

10. The appendix lists the important "Type Culture Collections" located in thirty-eight different countries. This is followed by a very valuable list of the names of the more than 8800 species of bacteria, fungi, rickettsiae, bacteriophages and viruses that are catalogued in the various collections. The availability of any of the species in culture may be de-

termined by addressing the Collection Types Microbiens at Lausanne, Switzerland.